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OPERATIVE AND INOPERATIVE
TUMOURS OF THE URINARY BLADDER.

A CLINICAL AND OPERATIVE STUDY BASED ON
FIVE HUNDRED CASES.

BY

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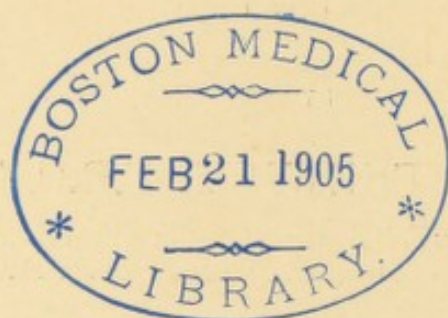
LONDON

J. & A. CHURCHILL

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4656



PREFACE.

I HAVE attempted in the following pages to record briefly my clinical and operative experience of an important but rare form of disease—tumours of the bladder. The observations have extended over a period of fifteen years, and embrace a varied material, museum, post-mortem, microscopical, clinical, cystoscopic, and operative.

Although the divisions are of the simplest, yet the microscopy has not been disregarded. In drawing my conclusions I have had the extreme advantage of a written report from Mr. J. H. Targett on nearly every case I have operated on, and I seize this opportunity of expressing my grateful appreciation of his valuable and unstinted help.

I endeavour to show that the cystoscope will often enable the skilled observer to pronounce upon the *character* of the tumour, and to say definitely whether operative interference will or will not lengthen the life of the patient, and whether it will alleviate or aggravate his suffering.

In this, as in all other branches of operative surgery, the profession has passed through its childhood of timorous effort and faulty technique; it has almost lived through its period of confident youth, with its rash enter-

prise and often misdirected zeal, and it is now entering upon an age which will be marked by accuracy of diagnosis, soundness of judgment, and precision in treatment.

It has been my ambition to add a contribution, however trifling and incomplete it may be so long as it prove reliable, to the maturer period of surgical endeavour, and with this object in view I place this short sketch before the profession.

E. HURRY FENWICK.

14, SAVILE ROW;

April, 1901.

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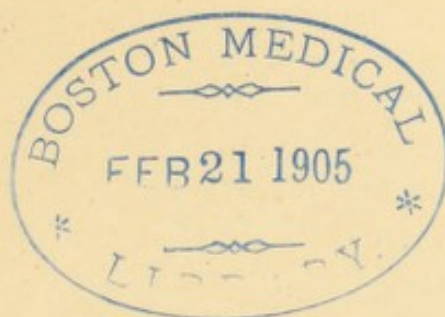
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CHAPTER I.

TUMOURS OF THE URINARY BLADDER; POINTS IN THE TECHNIQUE OF THEIR CYSTOSCOPY.*

PERHAPS in no other disease of the urinary tract has the electric cystoscope proved of such signal service as in the exact study of tumours of the bladder. Certainly in no other disease of the bladder has the method been of such uniform value, for by its means the diagnosis has become a certainty, the prognosis has been rendered accurate, and the operative interference has been guided on to purposive and judicious lines.

It would be wise, however, before the subject is considered in its various clinical aspects, to note the difficulties and dangers which are met with in thus examining a bladder affected by neoplastic changes.

But first a few rules of technique.

RULES FOR THE EXAMINATION OF TUMOURS OF THE BLADDER.

RULE 1: ALWAYS CYSTOSCOPE, NEVER SOUND FOR SYMPTOMLESS HÆMATURIA. "Symptomless" hæmaturia† is *the* symptom which should raise a suspicion of growth of the bladder. This sharply-defined symptom, when it is present *alone*, demands the employment of the electric-

* This and the following chapters are based on a personal experience and examination—clinical, cystoscopic, operative, and museum—of 500 cases of growth in the urinary bladder.

† "Symptomless" hæmaturia may be defined as an intermittent hæmorrhage in the urine, extending over a period of months or years, unaccompanied by any other symptom, such as pain (renal or vesical), or frequency of micturition.

light cystoscope. No other instrumental interference should be tolerated. For a practitioner to sound the bladder of a patient merely suffering from this single symptom, or to wash out that viscus, is worse than useless; it is often positively detrimental to the future physical well-being of the patient (compare page 9).

RULE 2: A GENTLE RECTAL EXAMINATION SHOULD BE THE FIRST STEP IN THE INQUIRY. A judicious cystoscopist, when summoned to a patient suffering from symptomless hæmaturia, will first gently examine the posterior wall of the bladder by introducing his finger into the rectum. Any pronounced circumscribed interstitial hardness of the posterior wall in patients suffering from symptomless hæmaturia renders a cystoscopy unnecessary, for the disease is probably infiltrating epithelioma, and in a few months cystitis will develop spontaneously.

French authorities state that all growths of the bladder can be detected by the finger in the rectum and the hand on the pubes. The practitioner must not expect to be able to diagnose vesical tumours so easily. The small benign papilloma is often very difficult to detect even with the finger *in* the bladder, whilst bimanual examination for such, unless of marked size, is always uncertain and illusory. Even a harder, firmer growth, such as a large walnut-sized, non-infiltrating, villous-covered epithelioma affecting the mucous membrane only, if it be situated on any wall but the posterior wall, low down, is generally indiscoverable on bimanual examination.

RULE 3: DARK HÆMATURIAS WITHOUT CLOTS RARELY NEED ANY PREPARATORY WASHING OUT FOR CLEAR CYSTOSCOPY; A DIURETIC OFTEN SUFFICES. The patient is put to rest for a day or two and takes Contrexville or Vittel water abundantly, and the cystoscopist can then examine the bladder in the natural medium without danger to the patient and without the necessity for an immediate operation (cf. Rule 4).

RULE 4 : ALWAYS CYSTOSCOPE AND OPERATE, IF NECESSARY, AT THE SAME SITTING IF THE BLADDER HAS TO BE WASHED OUT. Should the hæmaturia be profuse and mixed with clots it will be necessary to wash out the bladder prior to examination, and under such circumstances it is distinctly advisable to be prepared to operate supra-pubically then and there, for by so doing the wound will heal more rapidly. If operation is not permitted, and a diagnosis is insisted upon, less danger will be incurred if urotropine gr. v freely diluted is administered thrice a day for a few days prior to the examination, and if the bladder is washed out after it with a weak solution of silver nitrate, gr. j in 10 oz. of distilled water.

DIFFICULTIES IN THE CYSTOSCOPY OF TUMOURS OF THE BLADDER.

(a) *Hæmorrhage from Over-distension*.—There is a “psychological moment,” if I may use such a term, for examining the patient who has been drinking Contrexville water in order to ensure a full bladder of clear urine for examination. If the bladder is allowed to get too full, the overstretching causes slight rupture of the base of a growth, especially if it be epitheliomatous, and the hæmorrhage which ensues renders an examination futile. The best time to select is when the patient feels he is “full” and ready to urinate. The same remark, of course, holds for over-distension of the bladder in washing out that viscus prior to a cystoscopy.

(b) *Hæmorrhage from Abrasions of the Growth by Instruments*. *—The utmost gentleness has, of course, to

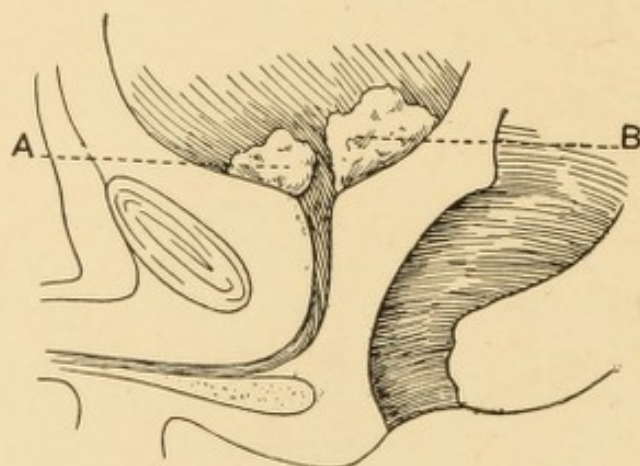
* It is a mistake to suppose that the calculus sound must necessarily produce bleeding from a vesical growth, even if it be used roughly. There are some dense papillomata of the bladder which do not bleed. Some time ago I obtained a good case on this false premise.

G. P—, æt. 27 (under Dr. Arthur Codd, of Bromley). This case was sounded twice under ether in a general hospital for symptomless hæmaturia. No hæmorrhage followed the examination, and yet any vehicle or train jolting induced hæmorrhage. The surgeon inferred on these grounds that a

be exercised with both catheter and cystoscope to avoid abrasions of the growth and a consequent hæmorrhage during the examination. A silk or soft rubber velvet-eyed catheter is the best form of instrument to use for washing. This should be passed so that the eye lies just within the orifice of the bladder. As regards the cystoscope, it must be introduced slowly, and the beak must be kept in the centre of the bladder.

The cases which will baffle the cystoscopist are those in which hard growth surrounds or abuts on the orifice of the bladder (Figs. 1, 2). These usually bleed furiously

FIG. 1.



A, B, growth around vesical orifice. Side view.

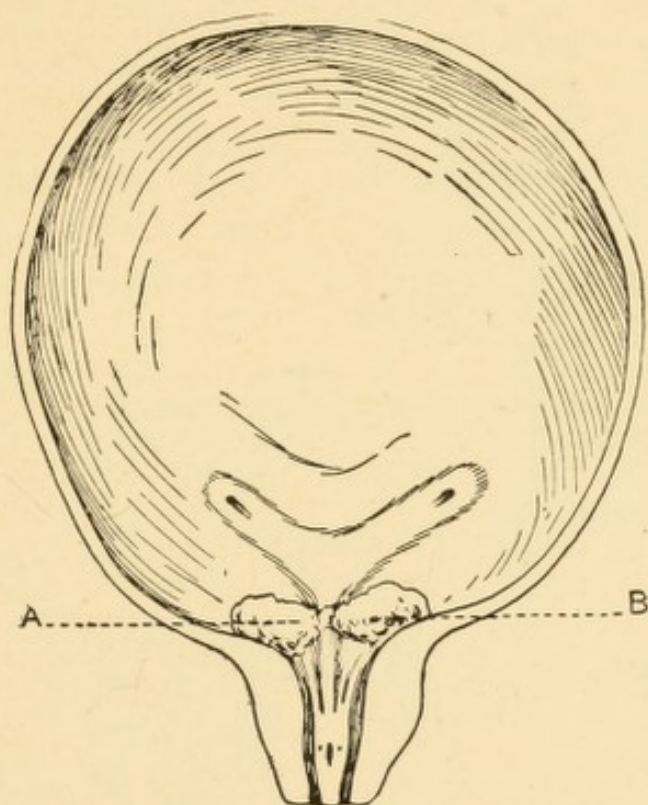
on the mere passage of any instrument. They render the cystoscope useless, and their diagnosis will generally have to be made by digital exploration through a suprapubic incision. Luckily they are uncommon.

Another cause of difficulty consists in a prolonged hæmorrhage in a feeble anæmic patient. Large black clots are liable to accumulate in the bladder under such conditions, and although the medium returns clear, or nearly clear, during washing, the cystoscopic view is obscured, because the base is covered by layers of buff or

vesical papilloma could not be present, and the patient was subsequently sent to me. I removed a large, many-lobed growth of the benign type. It hung by a short pedicle from the right ureteric area. Recovery.

dark-coloured clots, from which the colouring matter constantly diffuses and clouds the medium. In these

FIG. 2.



A, B, growth around vesical orifice. Front view.

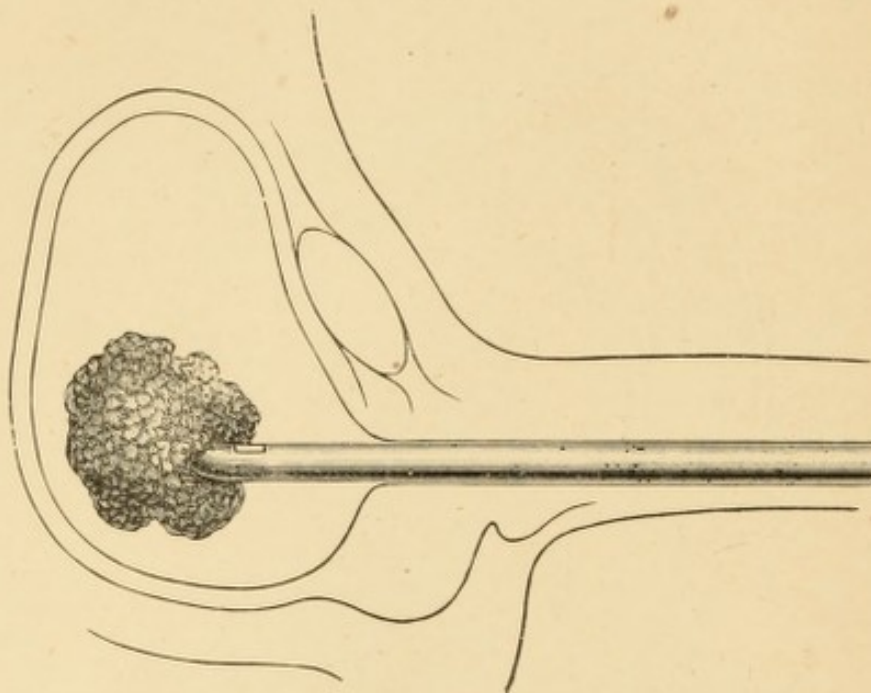
cases a clot-cutting catheter-cystoscope will be found valuable.

Lastly, in rare cases the hæmorrhage is unrestrainable and the cystoscope quite useless.

I have had growths which have bled for weeks, resisting all efforts at control, and have finally had to resort to supra-pubic incision for diagnosis.

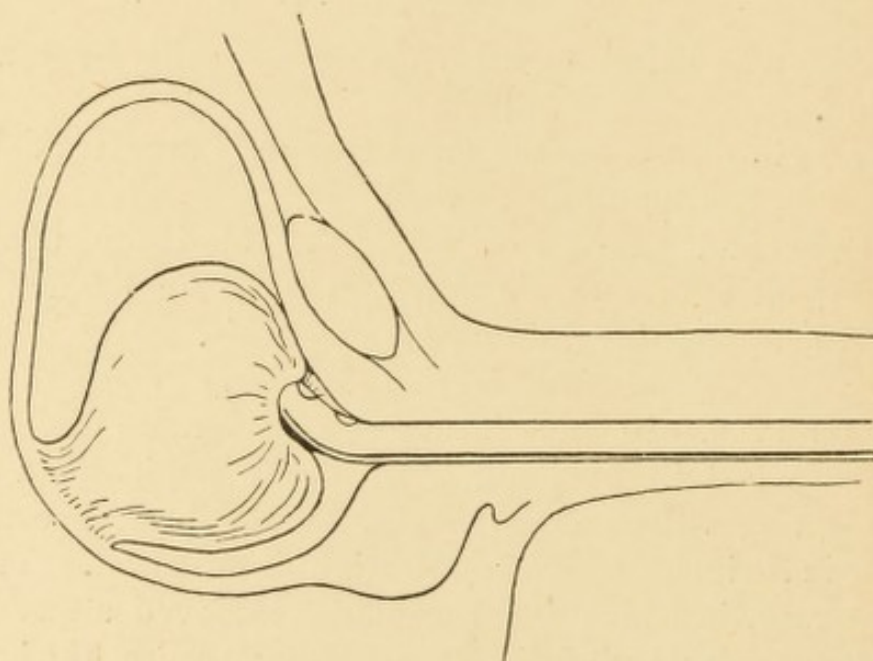
(c) *Difficulty in illuminating Bladders occupied by Large Growths.*—In some instances considerable difficulty is experienced in avoiding large fleecy papillomata or degenerating villous carcinomata, for the beak becomes buried in their substance, and the light is obscured. Thus in one case, in which I subsequently removed a mass of benign growth which filled a six-ounce measure, the beak and its contained light were quite enveloped in the papilloma, and I could see nothing (Fig. 3). With another

FIG. 3.



Case of A. L.—. Lamp plunged into a papilloma which, when removed, filled a 6-oz. glass measure.

FIG. 4.



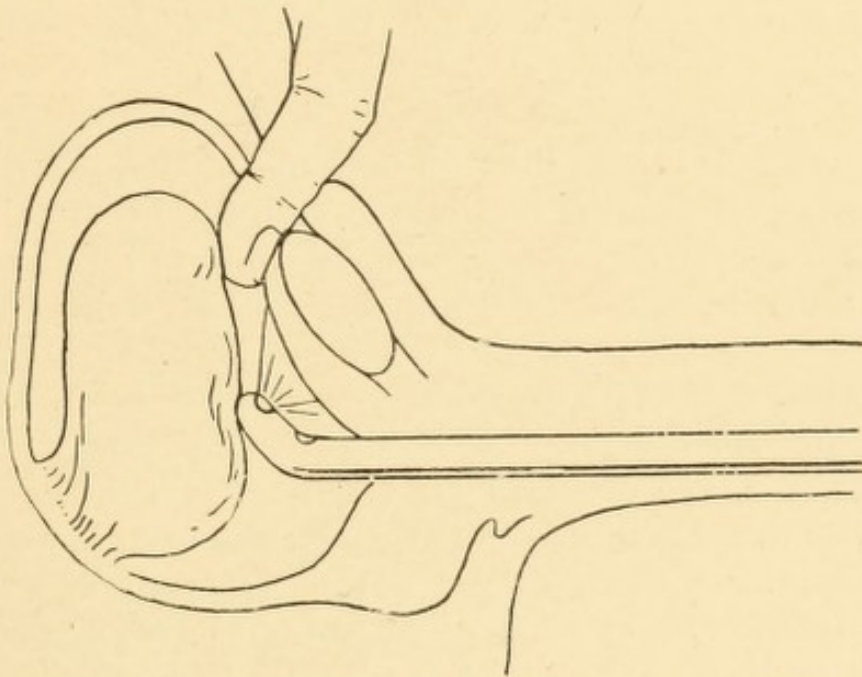
Attempted cystoscopy of Rev. R. B.—. Light obscured; cystoscope not rotatable.

growth, filling a twelve-ounce measure, I was equally at fault.

Again, the cystoscopist may fail altogether when examining a bladder occupied by a large, projecting, turnip-like, epitheliomatous growth, for it is impossible to manipulate any instrument in the narrow space left by the encroachment of a large firm tumour (Fig. 4).

I have met with several such, the volume of the growth being usually the size of a large fist. In each case I have had to resort to supra-pubic cystotomy for a diagnosis, but in each I have successfully removed the mass. Fig. 4 represents such a case occurring in June, 1897. I performed supra-pubic cystotomy, and lifted up the tumour with my forefinger (Fig. 5). After lifting

FIG. 5.



Supra-pubic cystotomy. Rev. R. B—. Fist-sized tumour lifted up with forefinger. Cystoscope still valueless.

up the mass, which equalled a man's closed fist, I found that I could introduce the cystoscope more easily, but that it was quite useless, because its rotatory action was curtailed. I removed the tumour. The patient is reported to be in excellent health (October, 1900).

(d) *Difficulty in washing out the Bladder.*—Occasionally in cases of large fleecy papillomata the eye of the catheter will get blocked with the growth, and the medium cannot be removed. In such a case let the patient be turned on to the side, and the eye of the catheter disengaged and directed towards that side of the bladder which is uppermost. The growth gravitates down, and the washing can then be proceeded with if the eye of the catheter is kept up.

(e) *Difficulty in ascertaining the Site of the Base of a Tumour possessing a Pedicle.*—This is a small matter and of no practical moment, but it may puzzle a cystoscopist to see a villous papilloma lying on the right side of the bladder, and on supra-pubic cystotomy to feel it springing from the left, or *vice versa*. It should be remembered that long-pedicled growths often have a wide range of movement in the bladder, and that the tumour changes its position by gravity.

Advantage is taken of this fact when formulating a prognosis, for the sessility or the pedunculation of tumours can be ascertained by varying the position of the patient; sometimes even the depth of the penetration of the growth into the submucous layers can be roughly estimated by the same means, but this is usually difficult.

Again, it is to be especially remembered that a heavy growth from the posterior or superior wall always drops downwards, and *appears* as if it sprang from the anterior wall, or in some cases from the posterior wall low down. An anterior wall growth is extremely rarely met with. The descriptions of such, which are not infrequent in the literature, are obvious inaccuracies, for such positions are not noticed in museum specimens. I have only met with one case in 135 operations. Moreover, apical growths are only met with in 3 per cent. of all cases.

(f) *Difficulty in determining the Character of the Base of the Villus-covered Growth for Prognostic Purposes.*—The novice will hardly arrive at an accurate conclusion as to the character of the base of a villus-covered growth; not

even a skilled cystoscopist can boast himself to be free from mistake. Those characters which point to a benign nature are tenuity of the pedicle, the presence of long, luxuriant villous processes,* freedom of the base from satellite splashes, and absence of small, clear, grape-like glands at the edge of a sessile growth.

DANGERS IN THE CYSTOSCOPY OF TUMOURS OF THE BLADDER.

An element of danger is at once imported into the case by the introduction into the bladder of any medium in the form of a wash,† no matter whether the medium used be sterilised or not. In every case of bladder growth without exception there is some ureteric change, which may be either of an inflammatory nature or mere atony, or both. It is more or less pronounced according to the duration of the symptoms and the drag on or irritation of the mouth of the ureter by the tumour. Washing out the bladder causes slight surface necrosis of the base, which may infect the unhealthy ureter, and thus a slight risk of a wave of pyelonephritis of one side is incurred. This is the reason why I urgently advise that all patients should, if possible, be examined only when the hæmorrhage has cleared off, and that the urine, naturally

* I need hardly caution cystoscopists against mistaking the necrotic shreddy pieces which peel off a disintegrating carcinoma for pure villous processes.

† Examples taken at random from note-book :

CASE 44.—A cystoscopy was proposed by a surgeon in the provinces to this patient. Tap water was introduced as a wash. A severe attack of cystitis ensued, which kept the patient in bed five weeks. He suffered great pain, and subsequently had an abscess which burst into the rectum.

CASE 47.—A gentleman consulted a gynecologist in London for irritable bladder, and was diagnosed to have stone, whereupon ether was given in this gentleman's consulting-room, and the bladder washed out with an evacuator. On recovering from the anæsthesia he was told that a stone had been removed, and he was sent home in a cab. He lay in bed six weeks, slowly recovering from the ensuing cystitis. On cystoscopy I saw a large fig-sized villous papilloma, pedicled in the right ureteric area; I removed it suprapubically.

accumulated in the bladder, should be utilised as a medium. Operating surgeons do not sufficiently grasp this danger. They are content that their patients should heal and leave their care apparently well. They are oblivious to the insidious slight pyelitis which many are suffering from when they are reported as "cured." When a patient dies a few months subsequent to the supra-pubic removal of an apparently benign growth, the untoward event is usually considered to be due to malignant disease rather than to the often preventable suppurative nephritis.

The following case, which I was permitted to watch, illustrates this :

H. M—, æt. 50. This patient had suffered from recurrent attacks of symptomless hæmaturia for four years. He had no lower urinary pain, but for three or four months before coming under the care of the surgeon he had had *pain in the left loin and back* ; no tenderness in either kidney. Urine sp. gr. 1018 ; no pus, no casts. Urine clear. On September 23rd the patient was cystoscoped by Mr. X—, and a pedicled villous papilloma seen at the *left ureteric area*. The temperature rose and oscillated between 98·6° and 100°. The growth was removed supra-pubically, October 26th. He healed in due course and returned home. A month later he was seized with obvious symptoms of left renal suppuration. The operator refused to interfere, and diagnosed that the left kidney had become cancerous. The patient died uræmic four months after the operation.

Especial care in obtaining aseptic cystoscopy in patients with symptoms of vesical growth is imperative in the three following groups :

1. In patients who experience an impediment to micturition.
2. In patients with unilateral renal pain.
3. In patients the subjects of soft, easily bleeding epitheliomata, when such are complicated by pronounced pyelitis.

1. When a growth falls on to the urethral orifice, or narrows it, there is always more or less residual urine

present, and dilatation of one, if not of both ureters, by back pressure gradually ensues. Slight cystitis may be induced by the washing, and a wave of inflammation may rapidly ascend to one or both kidneys. The cystoscopist will therefore do well to be chary of examining any patient with symptomless hæmaturia who complains of the stream becoming abruptly but painlessly "blocked" before the bladder is emptied, or of having to strain to make a stream in urination. I make an absolute rule in all such cases to be prepared to examine and to operate at one and the same sitting.

2. Unilateral renal pain denotes one-sided dilatation of the ureter and pelvis, and often slight catarrh in addition (*vide* page 27). A clinical note of warning is thus sounded for aseptic and gentle cystoscopy.

3. When a growth which bleeds easily and freely is present, and acid pyelitis co-exists, there is a particular tendency to rapid absorption of any septicity introduced from without; such patients are very dangerous subjects for cystoscopy. As an illustration combining these three points, I may relate the following case:

J. M.— at the age of thirty began to have frequent micturition.

At the age of thirty-two suffered from hæmaturial attacks, which appeared and disappeared at irregular intervals.

At the age of thirty-eight caught a severe cold, and was admitted into a hospital with "hæmorrhagic cystitis;" was cystoscoped by a surgeon;—"nothing definite found;" no reaction.

At the age of forty-one he came under my care, passing concretions of phosphate of lime and muco-purulent urine. He suffered pain in both his kidneys when he strained to urinate. I withdrew twenty-six ounces of filthy, bloody urine, and ordered irrigation of the bladder. The urine cleared in fourteen days, and I attempted to cystoscope. He bled freely, and I saw distinctly a white turnipy growth on the floor; I decided to leave it alone till later on. Diagnosis: epithelioma, complicated by atony of bladder and cysto-pyelitis. He continued to use his catheter three times in twenty-four hours until six months later, when I obtained permission to examine under ether. There was free bleeding, and the cystoscopy revealed nothing. A furious reaction followed—rigors, vomiting, suppression of urine, and death.

The report of the post-mortem was as follows :

Kidneys.—Both very large and pale; capsules not adherent. Pus in both pelves, more especially in left, which showed considerable dilatation. Left kidney substance, seen on section, pale and friable. The left ureter was dilated. In the right kidney several small cavities were found, the walls of which were thickened and lined with granulations, evidently abscesses of some age.

Bladder showed signs of recent acute cystitis. Situated on the trigone and at the sides of the orifice of the bladder were several masses of very friable growth, the surfaces of which were ulcerated deeply here and there. The largest projecting portion of this growth was roughly the size of an average thumb. The distal portion of this process lay right across the orifice of the bladder, and it must, in the lifetime of the patient, have prevented a normal act of micturition. The base of the growth infiltrated the bladder wall, but did not extend beyond it.

Prostate of normal size, firm and plump, no morbid condition detected.

CHAPTER II.

THE CYSTOSCOPY OF THE VARIOUS FORMS OF VESICAL GROWTH AND THEIR CLINICAL HISTORIES.

BROADLY speaking, the cystoscopist will encounter two well-marked varieties of vesical tumours: the villus-covered and the bald. Those clothed with villous processes may be benign or they may be malignant, but the smooth-surfaced groups are almost always malignant,* more especially if they occur after the age of forty-five. Nor is such a division devoid of practical utility, for it will be found that attempts at successful operative removal can only be made on those which are at first localised to the surface,—that is, on those covered by villous processes.

The first element, then, in rough differential cystoscopic diagnosis consists in noting the character of the surface of the growth, and some stress will be laid in the following pages upon this particular feature. Other differences exist, which sometimes enable the surgeon to form a fair opinion as to the benign or malignant character of the growth he is examining.

Cystoscopically, then, tumours may be considered under three heads, and this division, it will be found, is both clinical and operative.

- (A) The benign villus-covered growth.
- (B) The malignant villus-covered growth.
- (C) The bald malignant growth.

* In some the villi are so stunted, so closely set, and so covered in with epithelium, that the growth appears "bald," or like a child's closely cut worsted play-ball. The villi only become apparent microscopically; but this does not invalidate the rough-and-ready rule of bald growths being more often malignant than benign (cf. page 15).

I propose to deal with each in detail, noting their visual characters, clinical life-history, and treatment.

(A) THE BENIGN VILLUS-COVERED GROWTH. THE VILLOUS PAPILLOMA.

The processes or "villi" which clothe the surface are often of extreme tenuity and resemble chorionic villi. Hence the villous covering of a growth in a sterile bladder forms a beautiful cystoscopic object. The delicate leafy processes are usually of a light fawn-colour, and are veined by the blood-red streak of their capillaries. They float freely about in the vesical water, trembling at every pulse of the iliac vessels, or every movement of the beak of the cystoscope, and swaying with the eddying rush of the ureteric streams near which they are usually placed.

The entire picture is often like a small aquarium with a hydra or a sea-anemone moving its tentacles around in search of prey.

The Villi and their Significance.—The villi differ very greatly in length, breadth, and colour. Some are so stunted as to appear like blunt diminutive cones, whilst others are so thin and long that they resemble ship's pennants (one and a half to two inches long). In some the leafy expansions are flattened and fleshy, with thick joint-like divisions which cause the growth to appear like a miniature species of one of the cactus plants; such form a dense variety of villous papillomata. Some are even foliaceous, and in contour resemble the leaf of the primrose, and are twisted or enfolded in various ways. Some villi are colourless, and of a dull white, perhaps because they are affected by epithelial change; others are translucent and reflect the light sharply. Others again are caked or powdered with white phosphatic grit, or reddened by adherent blood. Sometimes tails and flakes of white mucus stream from the individual villi and increase by many times the real length of the fimbriæ.

The villi vary even at different parts of the same

tumour. At one part of a tumour the villi may be stunted or even absent, and at another they may be long and luxuriant. It may be that the blunter, more conical type have suffered from apposition with the vesical wall, for they are often found clothing the under surface of the flatter tumours.

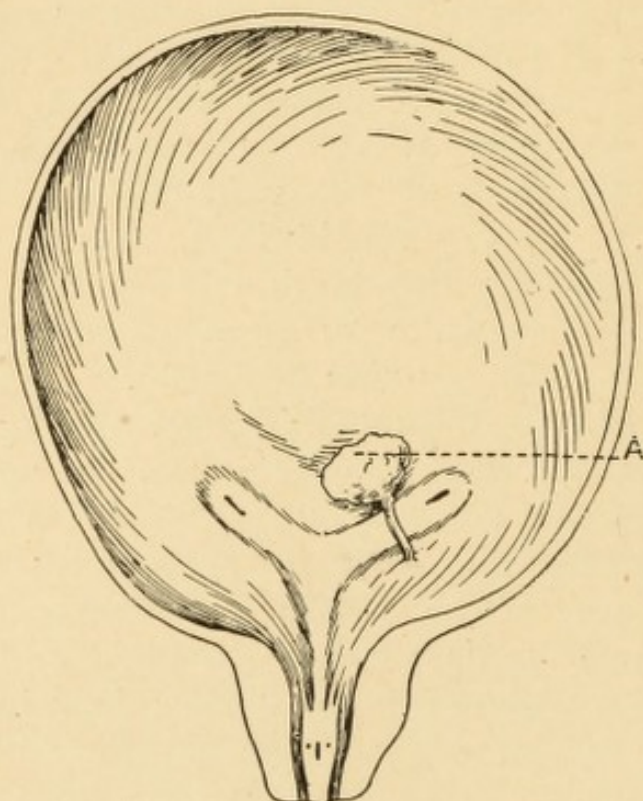
In a small proportion of the benign group *the surface may be papillated and yet on a casual glance it appears bald*, the villi being very short, and densely covered in by epithelium. *The colour of such growth is usually milk-white.* The surface is uneven and finely lobulated. Under the microscope it is easy enough to recognise the regular arrangement of the villi, but not so easy in cystoscopy. The eye should be trained to recognise this condition, and distinguish it from the absolutely smooth, reddish or white surface which characterises the epitheliomata in its non-ulcerated stage.

Clinical Note.—When villi exist, the question of operative interference at once arises, for most villous-covered tumours are only “*superficial*” at first, and many repay removal. I cannot say, however, that much can be learnt from the actual appearance of the villi as to the benign or malignant character of the growth. My impression is that when the longer luxuriant variety clothe the surface of a *single* growth, they usually indicate a benign character.* If the villous growth be multiple, the difficulty of diagnosing a benign character is increased, for epitheliomata may evoke pure benign villous papillomata clothed with villi of great tenuity and beauty, in the surrounding areas of the mucous membrane. Should the cystoscopist find more than *one* villous growth, he should undertake a careful and systematic search for evidences of malignant growth, in the shape of secondary plaques, and co-existing dull white, bare epitheliomatous tumours.

* I say this even with the knowledge that in the museum of the Middlesex Hospital (1745) the villi are very long and nodose, although they spring from an epithelioma.

The Core, the Pedicle, and the Site.—As a rule nothing is seen but the villous covering. The framework or core of the tumour is not visible. The attachment or base of the growth can only be roughly estimated by floating off the growth. This end is obtained by turning the patient from side to side, or on to his hands and knees, or by elevating the pelvis (Fig. 6), and thus allowing the

FIG. 6.



A, a villous papilloma floated downwards by position (Trendelenberg) to expose pedicle to cystoscopic view.

growth to drop away from its site and to expose its stalk. Another method consists in using an irrigating cystoscope to drive up the growth by a stream of water directed against it, but this plan is not so simple or so certain as the postural method. The pedicle may vary in thickness from a mere thread to that of a quill, and it is surprising how large a tumour may be nourished by a very thin pedicle. I have removed some the size of my fist with a pedicle the thickness of a quill. But there may be but little pedicle—only a fold of mucous membrane more or

less extended, or the growth may be sessile and arise without any trace of stalk or pedicle. In the latter case no change in the position of the patient moves the growth.

Clinical Note.—It will be found that a long-pediced growth is usually single, that it has arisen from that portion of the mucous membrane of the bladder base which is extensile (that is, from outside the region of the trigone). It may be affirmed also that the absolute cure of the *long-pediced* tumour by removal is more hopeful, though the deterioration of the kidney is usually more marked, and the danger of its operative removal is greater. Pediced villous growth is more often of a benign character than a sessile villus-covered growth. The more sessile the tumour, the greater will be the tendency to multiplicity (q. v.), the earlier the recurrence after removal. Sessile growth has, however, one counterbalancing feature in that its *primary* removal will be freer of danger, for it has not the same capacity for inducing backward pressure changes.

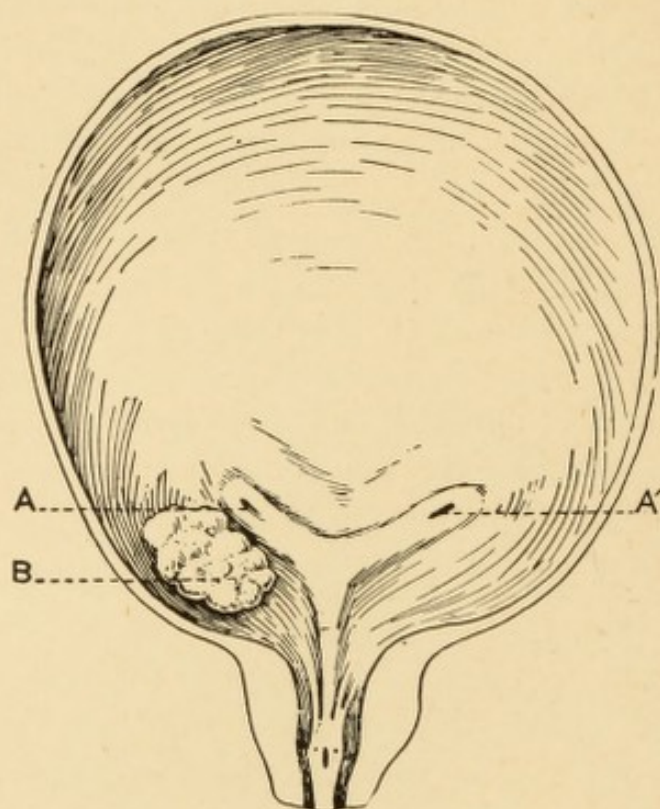
The Multiplicity of Villous Papillomata.—The greater proportion of cases examined *early* or operated upon *early* are single growths. In my first fifty cases all were single except three. But much depends on the duration of the case, for as time goes on, small secondary growths form around the site of the primary. At first these are mere splashes—some only the size of peas. They take up positions usually in one of two directions,—either towards the urethral orifice along the outer limbs of the trigone, or centrally up the posterior wall of the bladder.

Clinical Note.—I never care to see multiple splashes; it betokens, I am sure, a very decided tendency to wart production combined with a marked and continuous irritation. The prognosis of cure after operation will never be so good or so hopeful in multiple as in single papillomata. Nor can I shake myself free from the suspicion that there is a malignant action in multiple sessile growths.

77 *The Position of the Villous Papilloma.*—The position

affected by benign villous papillomata, as is well known, is in the neighbourhood of the ureteric orifice (90 per cent.). Careful cystoscopy will show that they are almost always outside the trigonal area to the outer side of the ureteric orifice and more often in front of it (*vide* Fig. 7). Very rarely are they on the true lip of the ureter

FIG. 7.



B, villous papilloma in front of right ureteric orifice A.

itself, and when they are found in this position they arouse a suspicion of direct irritation of an unusual kind from the kidney of that side.

Clinical Note.—The position of warty growth, or in fact of any form of growth, *near* the outlet of the kidney points to some irritation in the urine from that kidney. I may remind the reader that kidneys do not work always at the same rate, or produce urine of the same standard.* Not infrequently one kidney will be found

* Whether one kidney works at the excretion of salts while its fellow rests or works sluggishly I cannot say; facts for establishing this would mean infinite labour and work on the same patient, and this cannot be obtained

to excrete uric acid or oxalate of lime salts in a larger abundance than the other, and I have long regarded the kidney on the side on which I have found the villous papilloma as being the more active in excreting irritating salts than its fellow. It is with this action in view that I suggest, that to prevent recurrence, the patient should hereafter sleep on the side opposite to that from which the papilloma was removed.*

It is, as I say, very suggestive of profound renal in-

FIG. 8.



Oxalate calculus (not half size) which was removed through the perinæum from the lower third of ureter. It had evoked a villous tuft on an everted ureteric orifice.

fluence to find a tuft of villous growth on the *lip* of a ureteric orifice. Thus I have removed a tuft from the prolapsed right ureteric orifice of a young man, from the lower third of whose ureter I also extracted a large with safety to the patient. A large series of cases of ectopia vesicæ might be utilised, and I have attempted to do this in one or two cases by means of methylene blue, and it certainly appeared that one kidney threw out the blue easier than the other.

* We do not, perhaps, realise the effects of posture on a bladder filled with the concentrated urine of sleep. The most irritating and the densest layer falls to the bottom.

ureteric oxalate (Fig. 8). I have had an exactly similar case recently. In three other cases, tufts of benign villous growth at the right ureteric orifice, co-existed with renal carcinoma.*

Size of the Villous Papilloma.—There does not appear to be any law governing the size of the papilloma. The luxuriance of any particular villous papilloma does not appear to depend on the duration of its existence or on its position near the best blood-supply. Bulk seems more to depend upon tendency to slow carcinomatous change; at least all the very large papillomata I have removed have been reported upon by the microscopist as possessing suspicious characters of malignancy.

Secondary Changes Visible in Bladders which are occupied by Villous Papillomata.—The character of the mucous membrane in the immediate neighbourhood of some of the sessile villous papillomata is often distinctly altered, and the recognition of these changes is, I submit, of importance. The surface may assume an appearance as if it had received the impress of a coarse thimble. Sometimes pure villous splashes or tufts are seen. If the tumour is flat and succulent, and broadly pedicled, and if one side of it lies in apposition to the bladder base, its upper surface is papillated, but the under surface is smooth and free from villous processes, whilst that part of the base of the bladder upon which it fell and habitually rested is reddened, swollen, and granular; it has lost its healthy sheen, and looks a little honeycombed. In one or two cases the mucous membrane around was inflamed and the glands stood out prominently, exactly like a miliary tuberculous affection (cf. the appearance in carcinoma). Large vessels will be seen, usually running in converging or parallel lines towards the base of the growth from the vascular supply of the bladder mouth. If there has been much squeezing of the growth on to the trigone and orifice of the bladder, these parts will also

* Compare Author, 'Tumours of the Bladder,' p. 12, *et seq.*

be found dull, reddened, and gelatinous—a condition usually announced by perinæal discomfort or pain.

The Ureteric Orifice (cf. Renal Ache, p. 27).—But it is more especially to the ureteric orifices that the cystoscopist directs his attention in benign growth.

In many cases the ureteric mouth nearest the tumour is reddened, and its normal contour is obviously changed. It is no longer a tiny slit but an elongated furrow-like opening. The adjacent growth has affected it in two ways—it has dragged upon it, and, in addition, it has inflamed it by contiguity. More especially is the ureteric orifice affected when the tumour is pedicled, and the attaching stalk has been long enough to allow of the papilloma being swept into the urethral orifice with the issuing urine. In such a case one of the ureteric orifices, if not both, will be seen obliquely depressed; at the outermost end of the furrow will appear the rounded orifice of the ureter. This condition shows that some backward pressure has been exerted upon the ureter, and probably renal pelvis,* for the ureteric orifice is a valuable and reliable index to changes in the contour and health of the corresponding ureter and renal pelvis. In all cases where there has been obstruction to the outflow of urine, the ureteric orifice or the bladder, or both, will show evidence of back pressure. It will be found, however, that when the ureteric orifice does not bear evidence of back pressure the bladder wall itself will show signs of the same force in the shape of little saccules, and much fasciculation. The general rule of the *early* stage of back pressure being, if the bladder hypertrophies, the ureter escapes; if the bladder does not hypertrophy, the ureters suffer and give way.

Clinical Note.—The following axioms may be advanced:

1st. The longer the pedicle of the growth, or the

* In thirty-six Museum cases in which the ureters were detected and noted, these channels were dilated in twenty-nine instances (80 per cent.); seven only had suffered no change apparent to the naked eye (cf. Author, monograph on 'Tumours of the Bladder').

laxer the surface of its implantation, the more likely is the tumour to float into and cork the urethral orifice, the greater the chance, therefore, of residual urine accumulating, and the greater the danger of dilatation of the ureters and renal pelves. Such cases will not bear rough sounding or slovenly cystoscopy.

2nd. The more sessile the growth, the more medianly it is situated on the posterior wall, the less the chance of renal complications ensuing in the early stages.

The macroscopical conditions (visual and tactile observations) which favour a diagnosis of benign villous papilloma :

A single tumour, with a definite, healthy, well-developed villous covering, pedicled in front of one ureteric orifice, without evidence of surface irritation around it (in the shape of thimbling or swollen mucous glands), raises the hope of a benign character. When such a tumour occurs in a patient before the age of forty-five* with a history, over seven years in duration, of an intermittent recurrent hæmorrhage of the symptomless type, that hope is strengthened. Lastly, if the operator, in performing suprapubic cystotomy, detects a single soft moveable growth swinging on a thin pedicle, and finds no induration of the base whence the pedicle arises, he may consider he is dealing with a benign papilloma. Even if the base of a pedicled growth feels a little hard, and the microscopist reports an "inflamed papilloma," he may still adhere, with the above conditions, to the diagnosis of a non-malignant growth.

Clinical history.

In attempting to build up the clinical life-history of a *pure* benign villous growth, we are met by many

* If ages of the patients are taken when the first symptom arose it will be found that nearly half the number of cases occur between the years of 30 and 45. The decades are as follows :

Before 20	.	.	6 per cent.	Between 50 and 59	14 per cent.
Between 20 and 29	12	"		" 60 " 69	8 "
" 30 " 39	20	"			
" 40 " 49	40	"			100

and distinct loopholes through which inaccuracies creep in.

There is first the difficulty of selecting those patients, and only those, who have suffered beyond cavil from the benign growth. Microscopy cannot help us to escape mistakes if the pedicle and the mucous membrane of the site of the growth are not submitted for examination. The base is frequently unobtainable. The operator may not have removed it. It may, if removed, be indistinguishable after the hardening process and escape observation—and part of the tumour itself is selected and reported upon. No true judgment of the character of any villous growth can possibly be formed by examining the surface. Again, our present state of knowledge does not allow of any conjecture as to when a benign growth commences to take on malignant action, and there is no doubt but that this change is not an infrequent occurrence; and lastly, microscopists themselves differ very widely in their reports upon the same section. The following work is therefore not free from inaccuracy, and although I have selected only those cases upon which I have operated, and only those in which I have received an expert report on the microscopy, yet the cases have not been watched long enough to confirm or rebut the diagnosis of benign growth.

The following clinical history, which I have sketched out, is based upon my first fifty operations, and controlled by later and riper experience.

Clinical life-history of the villous papilloma.

The onset symptom,* or group of symptoms, which first attracts attention to the urinary organs of a patient suffering from villous papilloma does not herald the birth

* The clinician who will not take accurate notice of "onset" symptoms in urinary disease will fail more often in sound diagnosis than he who cross-examines severely for the symptoms which first drew attention to the urinary tract. There can be but little value in drawing conclusions from the symptoms the patient is suffering from when he applies for relief; an approximate idea of the origin of the disease can only be gained by obtaining information of the site and character of the first or early symptoms.

of the growth. Far otherwise. The onset symptom merely marks the termination of the first stage in the existence of the tumour. In nearly every case of tumour which I have cystoscoped within a few weeks of the commencement of the symptoms, I have found the growth to be in size above that of a monkey nut. Moreover, in examining cases by the cystoscope to find the cause for recurrence of the symptoms after operation, I have found that hæmorrhage only reappears when the tumour has reached a decided size. Lastly, I have met with growth before any symptoms have occurred. Nay, I have even known a tumour so large as to exert back pressure on one kidney, and the first symptom noted to be renal pain, and the patient to be treated for rheumatism, lumbago, and renal calculus before the hæmaturia appeared.*

I have even removed a large pedicled growth from a lady patient whose first intimation of anything wrong was a tumour which fell into and blocked the urethra. Her symptoms were described by her as follows:—"I was running down a rough hill road when suddenly I felt something drop into my 'privates' and plug them. I could not bring my legs together, but had to walk, stand, and sit straddlewise. How I got home I do not know. I only remember that I attempted to urinate at every step and could not pass a drop, and screamed with agony all the way." Retention ensued for twelve hours; suddenly the corking growth slipped back and she got relief. Cystitis, of course, ensued.† All these facts concur in permitting us to recognise a latent period.

* Patient (R. S—, æt. 32) was moving a case weighing 6 cwt. on October 18th, 1889, and suddenly felt pain in the left kidney. Direct pressure relieved it, but it increased until January 18th, 1890. On that day he passed a potful of bright blood, and immediately the kidney pain ceased. It returned, and ceased after three months on another attack of hæmaturia supervening. He now commenced to have an obstructed stream, and noticed he could pass twice as much urine lying down as standing. I cystoscoped and saw three villous papillomata, and removed them. One was pedicled, and lay over the urethral orifice. The pain in the kidney was quite cured by the operation.

† Another case, that of a Mrs. P—, is somewhat similar. Corking of the urethra took place three years before the hæmorrhage.

There are, therefore, three broadly outlined periods recognisable in the life history of a villous papilloma—the latent period, the hæmaturial period, and the final stage of cystitis with its consequent fatal renal complications.

The First or Latent Period.—No symptoms characterise this stage. The tumour, whether it be sessile or pedicled, gradually increases in size. It is only when its size permits of it being squeezed by the vesical walls in contraction that a little blood appears at the end of urination, or when by a sudden strain or over-exertion the base of the little growth is stretched, that a little blood issues and becomes mixed with the urine in the bladder. The latent period is thus brought to an abrupt conclusion, generally by the appearance of blood issuing from the urethra, either with or after the urine.

*The Second or Hæmaturial Stage.**—In a large proportion of the cases (84 per cent.) the second stage is ushered in by the blood appearing either at the end of urination or intimately mixed with the urine. Generally no cause can be assigned (80 per cent.) ; in a few instances only can some unusual exertion or fatigue be credited with the hæmorrhage. As might be anticipated, the bleeding is slighter and often insignificant when a provoking cause is absent. The bleeding is very rarely of a profuse type at the very outset, and then only when some severe strain has started it (6 per cent.). The hæmorrhage in most instances is accompanied by no other symptom, so that if the patient were blind or in the dark, he or she would not know that anything abnormal had occurred ; it is, in fact, a “symptomless” hæmaturia.

* Criticism might find fault with my selection of this term for this stage, because it does not represent the character of the entire class. In a small proportion, 6 per cent., renal pain is suffered from before the bleeding, and in 10 per cent. symptoms of blockage of the urethra and distress in urination appear before the blood. But no class can exist without exceptions. The average clinician does not need to consider the atypical cases. He aims at knowing what he will usually encounter, and what he may usually expect in the ordinary run of cases.

In a few hours or in two to three days the bleeding ceases, either spontaneously or upon the exhibition of an astringent. The patient is now well. The incident may even be forgotten. For two or three weeks, or three months, or for a year, or for two years, or for six years, or for even twenty years there is no recurrence; then suddenly and without warning red blood again appears at the end of micturition, or is noticed mixed with and colouring the urine a darkish red.

A general rule may be formulated thus: "The smaller the amount of the initial hæmorrhage, the longer is the interval of health before it recurs. Should the onset hæmorrhage be marked, and have followed a strain or over-exertion, it will recur quicker and in larger quantities."

In the intervals of bleeding the urine will be quite normal. As time goes on the patient may aggravate a slight recurrent hæmorrhage by overstrain. A long walk, lifting weights, hard sculling, or tennis, even an attack of constipation will suddenly transform a simple bleeding, which is but seldom repeated, into a sharp hæmorrhage which recurs every week or so.

At first rest in bed diminishes the loss, and exercise tends to increase it. As the disease progresses the recumbent posture and the action of astringent medicines lose their effect.

It is, however, interesting to note that intercurrent disease has often a distinct influence, especially in women on an intermittent hæmorrhage from vesical papilloma. Thus the appearance of carcinoma of the breast checked a periodic bleeding for months. A quinsy gave one lady eight months' release; an attack of acute cystitis afforded another four years' freedom. Even dilatation of the female urethra for exploration of the bladder in one case, and rough sounding for stone in several others, arrested a troublesome hæmorrhage for some months. These cases came subsequently under my care, and I removed papillomata in every case.

It must be borne in mind that the patient is free from any symptoms which point to the bladder as the origin of the blood. There may be, and there often is, sacral aching, or weariness and pain at the fourth lumbar vertebra (*infra*, Renal Ache). There may even be irritability of the bladder and slight penile pain* when bleeding is present, but it subsides with the hæmorrhage, and is obviously due to local congestion of the bladder at the base of the growth. Sooner or later the hæmorrhage gets out of control and becomes almost continuous. The patient becomes pallid and listless. The sallowness and the loss of weight may even arouse suspicions of carcinoma.

Such is the usual course of the symptoms caused by villous papilloma of the bladder in the hæmaturial stage, and it may be summed up in a line,—the greater the tendency to loss of blood, the less the chance of other symptoms supervening.

Other Symptoms less frequently noted.—But hæmaturia, although the first and the cardinal symptom of this stage, is not the only one. As time progresses two important symptoms may arise, and may be especially noted as occurring in patients who do not bleed continuously and persistently; they appear, perhaps, in the minority of the cases:—1. A renal ache. 2. An impeded urination.

1. *A Renal Ache.*—In most cases the loss of blood alone entails a weariness and an aching in the lumbar region, in others there is a sacral ache apparently due to pelvic nerve distress, the result of nerve irritation by a sessile or hard-based papilloma.

It is,† in some, more especially marked at the fourth

* Cystoscopy reveals in these instances a sprinkling of phosphate of lime on the growth—an evidence of local loss of health and inflammation which often transiently affects the core and the immediate base. It is interesting to note how small an inflamed patch of the large area of a healthy bladder will cause symptoms of cystitis.

† 1. A lady æt. 43, a patient of Dr. Oldfield, had suffered from sacral ache and hæmaturia for two years. I removed a pedicled growth from the left ureteric area and the backache subsided. It recurred and was removed on

lumbar vertebra, but this central pain is not and must not be confounded with the lateral renal ache of villous papilloma.

This is experienced in one kidney, and nearly always* in that kidney whose ureteric orifice is nearest the papilloma. It is usually a constant, dull pain confined to the kidney, but may extend to the groin; this is never very severe. It is increased by deep inspiration, coughing, or exercise. Even urination, by exciting back pressure, is a cause for the increase in pain. The kidney is not usually tender,—in fact, the pain is relieved by pressure. The urine does not often contain albumen or casts, and the specific gravity is about 1020. Cystoscopy demonstrates the orifice of the ureter to be altered in contour. It is reddened, the edge may be puckered and the opening distinctly larger and more elongated than natural. Spreading to it from the villous growth which usually lies in front of it are leashes of vessels or congestive patches. I have been accustomed to regard this aspect of the ureteric orifice and the subjective symptoms as indicative of ascending inflammatory changes affecting the renal pelvis. I believe that the primary focus of inflammation is at the base of the growth. Cystoscopy and microscopy prove the papilloma, especially if it be of the tougher variety, to be prone to undergo local inflammatory changes. The cystoscopic evidence consists

seven separate occasions, each recurrence being heralded by aching in the sacrum.

2. S—, a man æt. 32, had been treated as a malingerer, or a rheumatic, by various medical men and hospitals when he came under my care with hæmaturia. He complained only of his back, stating "that it felt as if it was broken" at the fourth lumbar vertebra. I removed three large villous papillomata from the bladder, and immediately the backache disappeared. He was free for a year, then the lumbar pain returned. I examined and found the growth had recurred. I again operated and the backache ceased. This happened on four different occasions, the backache always notifying him of the recurrence of growth.

* *Exception.*—D—, æt. 50. Symptoms arose in 1894, with hæmaturia, some frequency and pain in *left* loin. In 1900 I removed a pedicled papilloma from the *right* ureteric orifice.

in a small patch of necrosis covered with glistening lime phosphates, seen here and there on the surface of the papilloma. The microscopical evidence consists in detecting exudation in the pedicle and base. One more point: the inflammation at the base of the papilloma injures the elasticity of the ureteric area. The lips of the orifice, which usually open and close, protrude and retract at each efflux of urine, now gape and remain fixed. Hence the readiness with which inflammatory changes may attack the orifice, and ascend the channel to the renal pelvis. So marked is this deterioration of the ureteric orifice that if the pedicle of the papilloma elongates sufficiently to permit of the growth falling into the urethral orifice, the back pressure set up by the impeded stream is exercised chiefly upon that ureter, from whose area the growth arises, and is "felt" by the corresponding kidney. Here are a few examples, taken from the first fifty cases I operated on:

Growths sessile and not impeding urination.

1. U.—Pain in right kidney; sessile papilloma removed from right ureteric area.
2. W.—Pain in right kidney; papilloma removed from right ureteric area.
3. F.—Pain in right kidney; sessile papilloma removed from right ureteric area.
4. H.—Pain in left kidney; papilloma removed from left ureteric area.

Growths pedicled and impeding urination.

1. R.—Pain in right kidney; papilloma removed from right ureteric area.
2. R.—Pain in right kidney and pyelitis; papilloma removed from right ureteric area.
3. S.—Aching in right kidney; papilloma removed from right ureteric area.

4. S.—Aching in right kidney; papilloma removed from right ureteric area.

5. T.—Aching in right kidney; papilloma removed from right ureteric area.

The lessons derived from the knowledge of this fact are—

First: Unilateral renal pain should always be inquired for. It not only gives the clinician a hint (in the absence of impeded urination) on which side a villous growth may be expected; but

Secondly: It renders asepticism in all instrumental and operative interference doubly imperative; and

Thirdly: It demonstrates the inutility of diagnosing stone or other disease of the kidney when a patient complains of unilateral renal ache and hæmaturia; it may explain the cause for some of those *negative* explorations which are nowadays so common in renal surgery. It is obvious how easily such mistakes in diagnosis can be made, and how much needless renal exploration can be avoided by the judicious and skilful use of the cystoscope.

2. *The Impeded Stream*.—A pedicled papilloma rarely announces its presence, in the first instance by floating into and obstructing free urination (cf. Case, p. 24). As the tumour increases in size, however, its pedicle elongates by the suction-drag exerted on it by the out-flowing urine, until its excursions are free enough to enable it to block the urethral orifice, like a wash-basin plug, when the bladder is only partially emptied.

Nor is it necessary that the original papilloma should always be credited with these powers of obstruction. In a few cases a second and younger papilloma, pedicled and situated nearer to the urethral orifice, is the peccant factor in the disturbance. In one of my patients a *primary* single sessile button of villous papilloma was noticed. Three years later a damson-sized pedicled papilloma grew on the anterior wall in the middle line, half an inch above the urethral orifice. As the bladder gradually emptied it descended, and fell like a sluice-

gate over the opening when the bladder had only half evacuated its contents.

The time which elapses from the date of the appearance of the blood (the commencement of the second stage) and the blockage of the stream is very variable. It may take years, or it may not happen at all. But when it does occur it creates so striking a symptom that the patient complains of it even more than the appearance of blood. At first the impediment is annoying, finally distressing. The urination starts in a full stream, and after a few ounces or a third or two thirds of the urine have been evacuated, a gradual or sudden check to the outflow is noticed. One patient graphically described this action as being like "pouring tea from a teapot with a tealeaf-choked spout." Perhaps the patient alters his position, and finds that he can pass water better when lying on the side or the back, or by lifting up the body, only taking a deep breath and expelling it again: all such manœuvres obviously cause the growth to drop away from the orifice or drag it away by diaphragmatic action.

If the patient strains to overcome the obstruction, he experiences pain at the glans penis, and a little blood escapes at the end of urination. I have even seen blood pouring from the penis at the end of the act as if the growth was being squeezed like a sponge. Sometimes fragments of growth are torn off, and come away subsequently with the urine.

Frequency of urination is usually present with an obstructed stream. This is not the irritability of inflammation, for the urine may be brilliantly clear. It is merely the result of an unemptied bladder.

Two remarks, however, may be made. It does not necessarily follow that a pedicled growth will produce corkage even when it has apparently a very lengthy stalk and a free range of movement. Nor does it follow that an impeded stream should elicit renal pain, for both ureteric orifices may be seen enlarged without any back-ache.

A few minor symptoms complete the second stage in the life history of villous papilloma. Most papillomata gradually become inflamed at their base, and though this is entirely a local condition, yet it evokes frequency of urination, some scalding in the urethra, and penile pain. The attacks are, however, transitory, and often relieved by a little hæmorrhage. They are not to be counted as marking the third stage—that of cystitis. As time goes on the patient loses weight, becomes cachectic; this is sometimes due to the unilateral renal deterioration, but more often it is owing to the drain of the hæmorrhage. Palpitation, breathlessness, constipation, dyspepsia, and other signs of lowered vascular vitality appear.

The second stage is abruptly terminated by an attack of cystitis. The inflammation appears spontaneously in those cases which are not meddled with, but as often as not mistaken zeal prompts the medical man to wash out the bladder, and the third stage with all its attendant misery and renal risks is forced upon the patient years before it would otherwise appear.

The duration of the second stage, before the bladder becomes inflamed, is uncertain; it varies according to the implantation of the growth; the sessile have usually the longer life. Thus I have known patients with single *sessile* papillomata live comfortably for six, ten, thirteen, twenty, twenty-one, twenty-two years, and yet have healthy, non-purulent urine. On the other hand, the pedicled papillomata are exposed to violence; they bruise the vesical neck; they grow more rapidly and luxuriantly; the symptoms they elicit often necessitate the use of a catheter; infection therefore occurs earlier, and the stage of cystitis is reached comparatively sooner.

The third state—the stage of cystitis: In this stage the bleeding generally ceases, and purulent urine is passed.

I have met with more than one instance in which the patient was hurried into this stage by the exhibition of aluminate of iron. Obstinate constipation ensued, and

cystitis supervened. It has always seemed to me that the bowel is the peccant factor in the induction of this stage, for the cystitis is usually of the acid type.

Once cystitis is induced it rarely ceases entirely—certainly the congestion consequent upon the inflammation increases the pabulum for the growth of the papilloma and the growth multiplies. Irritability and pain wear out the strength of the patient. Inflammation ascending to the kidneys gradually cripples the functions of these organs. Thirst, nausea, morning sickness appear, and the patient dies exhausted, or suddenly succumbs to uræmia.

Types of Pure Villous Papilloma.

Sessile (recent).—(a) Q—, æt. 42, sent by Dr. Jackson, of Chorley. Six months before coming under my notice he had an attack of symptomless hæmaturia. It lasted two days. Five months later it recurred, and causelessly. There was no pain. The hæmorrhage became constant, and I removed, supra-pubically, a cherry-sized, sessile, villous papilloma, from the right ureteric area.

Sessile (old history).—(b) H—, æt. 73. Dr. Waller Gripper, of Wallington. Twenty years ago symptomless hæmaturia appeared, and recurred on and off for two or three years. Suddenly the hæmorrhage ceased without any apparent reason, and he remained free for six years. It then recurred at long intervals. Any severe exercise, such as straining at archery, gardening, sculling, caused it to return with violence. He never suffered any pain, except when large clots blocked the urethra. He had never had any instrument passed. Five weeks before I saw him he over-exerted himself in a boating excursion, and hæmorrhage appeared and became constant and severe. When I saw him his bladder was hugely distended with blood-clot. He was exsanguine, listless, and deaf, and fainted when we lifted him on to the operating table. I operated supra-pubically, and found a tough, villous papilloma occupying the left lateral wall. He recovered slowly, and I operated a few years later for calculus.

Pedunculated.—Mr. H—, æt. 27, sent me by Dr. A. Kennedy, of Plaistow. Ten months prior to seeing me he had suddenly and causelessly passed blood. This subsided, recurred, and became intermittent. It seemed to depend greatly on exercise, for it would

cease if he rested, and became profuse if he walked much ; it even appeared after marital intercourse. The character of the stream was typical. The first half came in full volume, then it dribbled down. He used to strain greatly to finish emptying his bladder, then blood used to come, and pain was felt in the glans.

He used to micturate every one and a half hours to two hours in the day, and rise four to five times at night. If blood was present he had less frequency. I removed a large fleecy villous papilloma from the left ureteric area.

Atypical Villous Papilloma.—I have referred to a small class of cases which do not conform to the usual type, by entering upon their clinical life with the usual symptom—hæmaturia. These are atypical, for they only form 16 per cent. of the cases. They are divided into two groups. One group (A) has an onset symptom of impeded urination, and the other (B) onset symptoms which resemble those of stone in the bladder.

(A) In the *former* the first symptom is not that of hæmaturia, but of an impeded urination with or without renal pain. In fact, the growth is usually firm enough to increase in size without becoming frayed or lacerated on its surface or at its attachment by the violence which the contraction of the bladder always exerts upon a foreign body within its cavity. Usually these growths are coarse and luxuriant, and nearly always firmer in consistence, the villi are stunted and buried in epithelium. They are always pedicled.

The following examples will bear out these statements :

Mr. L—, æt. 40, was brought to me by Mr. C. Harrison, with a diagnosis of villous growth. For two years he had suffered from an impeded urination and from a continuous weight and bearing down in the genitals, with a pain during urination in the inguinal regions, inner side of thighs, and the penis. He had, moreover, a frequent desire to urinate, and impeded stream. After two years of these symptoms a profuse hæmaturia appeared, which became so alarming that I performed supra-pubic cystotomy at an hour's notice, and removed a coarse villous papilloma, which was pedicled to the right ureteric area. It filled a six-ounce measure-glass.

Mr. B—, æt. 32, who was sent me by Dr. Alex Turner, of Plymouth. This patient noticed the flow of urine suddenly checked before he had finished micturition. In five months he began to suffer from imperious desire, and his trousers often received an involuntary discharge of urine. He was sounded for stone, and immediately a profuse hæmaturia ensued, which became intermittent. I removed supra-pubically a villous papilloma, the size of a small Tangerine orange; it was pedicled to the right ureteric area.

Mrs. P—. This lady, æt. 56, was sent to me by Dr. Lloyd Jones. Two years before blood appeared she noticed the stream of urine suddenly stop, and that when she shifted her position by rising from the stool the urine commenced to flow. The hæmaturia was started by a severe attack of bronchitis. I removed a chestnut-sized, villous papilloma, which was pedicled to the left ureteric orifice.

(B) In the second small group of atypical growths the symptoms commence with irritability of the bladder, penile pain, and a little blood, symptoms which resemble those of early vesical tubercle or stone. They arise either in the sessile or pedicled variety, and appear to depend on slight basal cystitis around the tumour.

Mr. G—, æt. 50, was brought to me by Dr. George Flower of Yeovil. Six years prior to my removing a small, tufted, sessile, villous papilloma from the right ureteric area, he was seized with a continual desire to urinate after muscular exertion, a little blood being passed at the end of the act. These attacks were very transient, though they recurred on over-exertion.

Mr. H—, æt. 50, sent by Dr. Clarke. Two years prior to my removing a fig-shaped and sized villous papilloma from the right ureteric area he had transient attacks of vesical irritability and penile pain. He had hæmorrhage after the bladder was sounded and "sucked" for a supposed calculus.

Clinical Summary of the Usual Form of Villous Papillomatous Disease.

Villous papilloma of the bladder is the direct result of a disordered renal function, co-existing with a tendency to wart formation,* that is to say, papilloma of the bladder would be rarely met with were it not that irritating urine from the kidney streams over the ureteric orifice and excites papillomatous growth in its neighbourhood.

At first the only symptom is the appearance of blood at the end of the stream, or mixed with the urine; but as time goes on the loss may become so profuse as to endanger life directly, or to lay the patient open to serious intercurrent disease. As the tumour enlarges a renal ache may be noticed, and an impediment offered to the act of urination. The kidney ache, which is evoked by ascending inflammatory changes, with or without back-pressure distension, forms a guide to the position of the papilloma; at the same time it should serve to warn the practitioner of the danger of exciting cystitis.

Impeded urination is due to the villous papilloma floating into and obstructing the urethral orifice. It invariably leads to the accumulation of residual urine. Hence this symptom is a contra-indication to vesical irrigation. Small inflammatory foci in the papilloma base cause slight local inflammation of the adjacent bladder wall, and transient attacks of frequency and urethral pain ensue. Finally, cystitis supervenes, and the highway to the kidney having been already laid open, renal symptoms are added to the clinical picture. These confuse the diagnosis, complicate the disease, and in time terminate the life of the patient.

* The patient very often has cutaneous warts, either hard or soft.

THE QUESTION OF OPERATIVE INTERFERENCE.

A few words upon the necessity or the advisability of operating upon a villous papilloma may be added to the brief foregoing sketch of the cystoscopy and life-history of such tumours. And first, it is wise to ask what symptoms force the operator to interfere, permitting of neither hesitation nor delay?

I hold that the following symptoms indicate that operation is a necessity.

1. *Long-continued, Severe Hæmorrhage.*

Operation is here a life-saving procedure. It may be, perhaps, considered as useless to interfere with a patient who has been bleeding continuously and freely for weeks, even months; to operate when the patient is bleached, listless, and breathless on any exertion; still more useless, it may be contended, to do so supra-pubically when the patient faints on being raised in bed. But it is not so. I have operated on many such, and it is the only means of saving life, for drugs are useless in such prolonged hæmorrhage. It is remarkable how well such a patient takes the anæsthetic, and how quickly he recovers once the bleeding has been arrested. But this cannot be affirmed of the patients who are suffering from malignant growth. In this the patient is weighted with an exhausting disease as well as blood-loss.

2. *Pronounced "one-kidney ache."*

This symptom is a distinct, though not an immediate, indication that the source of irritation should be removed. The ache will probably not subside on the removal of the growth,—in fact it may not disappear for months after. The kidney ache itself can sometimes be cured by making an incision in the loin, and by freeing the kidney in its fatty capsule.

I interpret this rightly or wrongly as pointing to the drag upon a sensitive kidney by surface adhesions, these latter being induced by inflammation travelling from the ureteric orifice to the renal pelvis, and from the renal pelvis to the cortex.

3. *Impeded Urination.*

This symptom, especially if it is accompanied by pain in the kidney on straining to micturate, demands supra-pubic removal of the growth. It should not be palliated by means of the catheter. Delay and catheterisation merely induce pyelitis of a type which can *never* be cured without nephrectomy.

A Condition Unfavourable to Operative Measures.

Pyelitis.—Symptoms of pyelitis, though they do not contra-indicate operation, are always grave evidences of renal deterioration and susceptibility. Co-existing pyelitis demands the strictest asepticism in operating, the greatest gentleness and exactness in removing the growth and its base, and the most complete and somewhat prolonged drainage of the bladder after the operation. If these provisions are not ensured, a fatality at the end of the third week may be expected. I lost four patients in my first fifty operations (Cases 4, 11, 20, 29, Appendix), all from renal complication; two, I am grieved to say, I trace to the direct result of insufficient drainage. With knowledge acquired from these, I have, however, lost only nine in one hundred and thirty-five removals of all forms of growth (page 80).

The Advisability of Operation.

But presuming the operator is not forced to operate by such urgent symptoms, what advice should he give to a patient suffering from villous papilloma? Much will depend on the cystoscopy. If the papilloma is stalked,

if the ureteric orifice is seen to be narrowed and inflamed, I hold that operation is indicated. If, on the other hand, the growth is small and sessile and well away from the ureteric orifice, it is better to re-examine * in six months' time and note the rate of increase, and whether seedlings or splashes are forming around, rather than to operate.

It is interesting to note that these small villous papillomata are often apparently controlled, both as regards their increase in size and the symptoms they evoke, by careful regulation of the diet, by altering the character of the urine, and (?) by sleep posture. I generally place the patient on a dietary as free from meat as is consistent with his occupation and health, strictly forbidding fruits causing the output of oxalates (rhubarb, pears, etc.). Boiled water, rain water, distilled water, Salutaris, Pluralis, Malvern water are advised rather than the ordinary drinking water. Every morning a tumblerful of Contrexville or Vittel water should be taken half an hour before breakfast and the same at bedtime. If the papilloma springs from one ureteric orifice I suggest that the patient should sleep on the opposite side. If the growth is on the posterior wall the side position should be adopted.

* Always with the same full bladder, the same elevation of pelvis, and the same magnifying power of the cystoscopic tube.

NOTE UPON TWO ELEMENTS OF DOUBT IN THE DIAGNOSIS AND
PROGNOSIS OF THE BENIGN VILLOUS PAPILLOMA.

The cystoscopist who aims at accuracy in diagnosis and prognosis must always carefully reckon with two errors which may creep into his appreciation of the character of some of the cases of apparently benign villous papillomata. The first is the chance of a gradual malignant transformation of the stalk or base of a benign papilloma. The second, the co-existence of benign papillomata with carcinoma either of the bladder or kidney.

(A) *The Gradual Transformation of a Benign Papilloma
into a Malignant Papilloma.*

I cannot say that this will be frequently encountered. Our present knowledge of these growths is as yet too immature and the chances of error are too great* to permit of any dogmatic statement as to the probability of such a change taking place in any given case; still less of the frequency with which such a change may be expected. Cases, however, occur which point to such a transformation, and we have the well-known clinical analogy of papillomata of the skin taking on malignant action.

Although villus-covered malignant papillomata are usually more indolent in their growth than other forms of malignant disease of the bladder, yet I have met with cases eventually proving to be the former disease which have been marked by symptoms extending over twenty years. This prolonged life forces me to suspect that the papillomata were at first benign, but that bladder-fret combined with a marked carcinomatous predisposition gradually transformed them into malignant growths. Thus:

Dr. Mooney brought me a gentleman æt. 44, who had suffered from symptomless hæmaturia for twenty-two years before coming

* Cf. Author, monograph 'Tumours of the Urinary Bladder,' p. 67.

under my observation. He had had intermissions—being in perfect urinary health for so long a period as ten years in one interval, and four years in another.

Four years prior to his cystoscopy his stream became blocked, obviously by growth occluding the vesical orifice, and the difficulty in urination culminated in retention, for which the catheter was used. Cystitis ensued, but partially subsided; it recurred, and at the fourth attack pain in the left kidney supervened. I removed, supra-pubically, a large, walnut-sized, broad-pediced, villous papilloma from the left ureteric area, and another and smaller from the right ureteric area. The bases were succulent, and Mr. Targett reported they showed malignant characters. He recovered; but the growth returned, and he eventually died uræmic.

A few other cases incline me to believe that the stalks or bases of those which seem to take on malignant action thicken and shorten, until the entire growth becomes sessile, or absolutely sessile (cf. Figs. 10 and 11).

(B) *The Co-existence of Benign Papillomata with Carcinoma of the Bladder or Kidney.*

I have shown from museum specimens that certain epitheliomata of the bladder are able so to irritate the surrounding healthy vesical surface that pure or benign papillomata spring up.* My cystoscopic and clinical knowledge corroborates this fact, which renders it a serious source of error in settling the question as to whether any given multiple growth is worth while removing.

As an example, Fig. 9 represents a bladder which I removed from a male patient aged 58. "Above the right ureteric orifice is a benign villous papilloma with some chronic inflammatory change, but it offers no evidence of malignant disease. Around it is a dense villous epithelioma (squamous-celled), a variety which is not that which one would expect to be due to malignant transformation of a papilloma" (Mr. Targett's report).

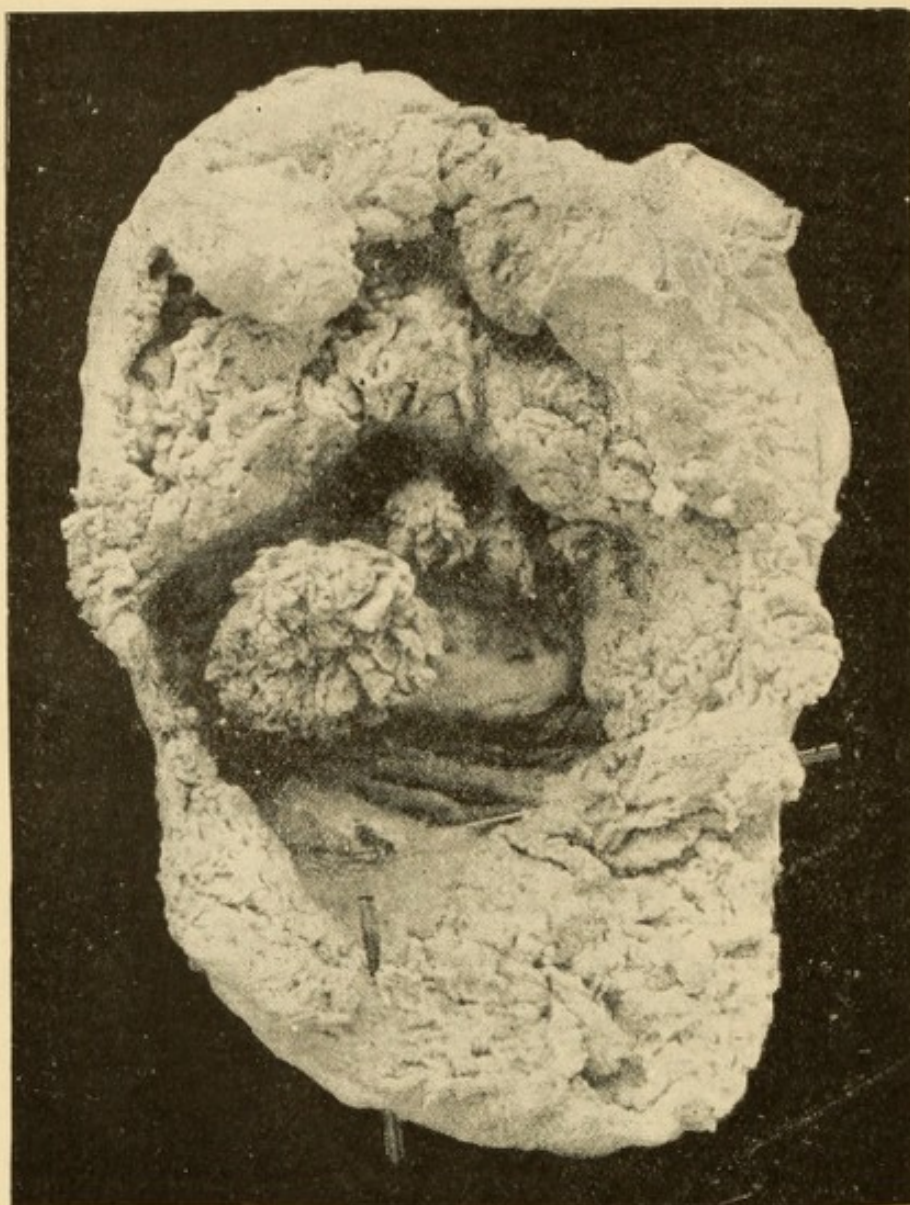
Again, some renal carcinomata give rise to benign papilloma at the orifice of the ureter of the diseased

* Author, 'Path. Trans.,' p. 178, February, 1888.

kidney, or at the vesical orifice of the urethra. I have met with cases in practice. I need hardly say how puzzling such are, for the real source of the trouble is overlooked.*

A good example is in the Royal College of Surgeons'

FIG. 9.



A benign villous papilloma surrounded by masses of cancer.

Museum (Spec. 3691). A small, soft, semi-transparent papilloma is seen attached by a narrow pedicle to the neck of the bladder, immediately above the orifice of the

* Cf. Author, monograph 'Tumours of the Urinary Bladder,' p. 12.

urethra. One end of the right kidney was occupied by a round mass of soft, spongy substance, which microscopically was proved to be cancer. Judging from analogy of various similar cases the papilloma had been called into existence by the irritation of discharges from the carcinomatous kidney.

CHAPTER III.

VILLUS-COVERED MALIGNANT GROWTHS (PAPILLIFEROUS CARCINOMA).

ON examining the cystoscopy of villus-covered malignant growths, and on analysing their clinical and operative histories, we cannot avoid the inference that they form an intermediate class between benign papilloma on the one hand, and malignant infiltrating growth on the other. They resemble the former in their comparative indolency and in their superficial structures when they are in their earlier stages, whilst they are akin to the latter in their basal tissues when far advanced.

The Macroscopy: Visual and Tactile Observations.—Cystoscopy of a pronounced villus-covered carcinoma shows the growth to be covered with villi, perhaps more stunted and more succulent in character* than those which clothe the benign papilloma. Moreover, the proportion of those tumours which appear *bald* of villi†—those in which the villi are present, but greatly covered in by an exuberant epithelial layer—is greater in this group than in the benign (18 per cent. as against 8 per cent.). Single tumours also are more rarely met with in operations upon this tumour than in the purely benign (65 per cent. as against 92 per cent.). In fact, the

* I am here alluding to primary growths. When a growth has existed for some time it is very liable to produce secondary splashes and growths, which are often clothed with villi of great tenuity and beauty.

† Compare clinical note on p. 15.

character of the class is towards multiplicity, a condition which becomes more and more pronounced as time goes on. Thus, in museum work on what may be termed completed cases, such tumours are very frequently multiple, whilst in patients who have been operated upon the recurrence is invariably in the shape of a multiple growth.

Again, the tumour or tumours are more often sessile than in the benign group (53 per cent. as against 28 per cent.), and when pedicled, as they are in 47 per cent. of my operation cases, they are noted as having had "thick," "dense," "stout," "short" pedicles, or to have been broadly inserted—descriptions which denote the gradual increase in the stalk from malignant interpenetration. Finally, in the sessile group, small clear, grape-like bodies may be noticed at the growing edge of the patch. These are distended glands, a condition which, rightly or wrongly, I look upon as being evidence of deep infiltration.

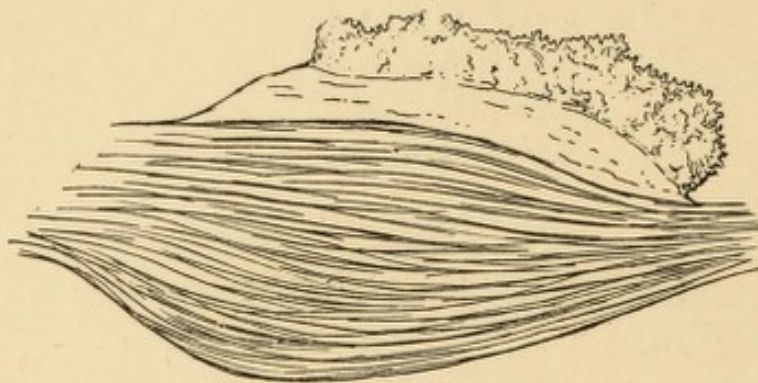
These growths also affect the ureteric areas, the right being, perhaps, the more often the site of the original tumour.

The rectal examination of the bladder base is often quite negative for the first two or three years. In fact there is very rarely any definite hardening due to infiltration until quite towards the end of the case. The clinician will probably note there is a feeling of bladder fulness, or think he is touching an hypertrophied muscular wall, *but* he will not detect that hard cake-like induration so characteristic of the infiltrating group of vesical cancer. The same remarks hold good as regards vaginal examination.

The prostate in men, about or over sixty, whose bladders contain a villus-covered cancer will be noted to be often tougher, harder, and smaller than natural; but whether this is due to propinquity of the growth, or other well-known changes which occur at this age, I cannot say. It is not due to infiltration of the disease. I have been inclined to

believe that a succulent enlarged "senile" prostate is rarely met with when villus-covered cancer is present.

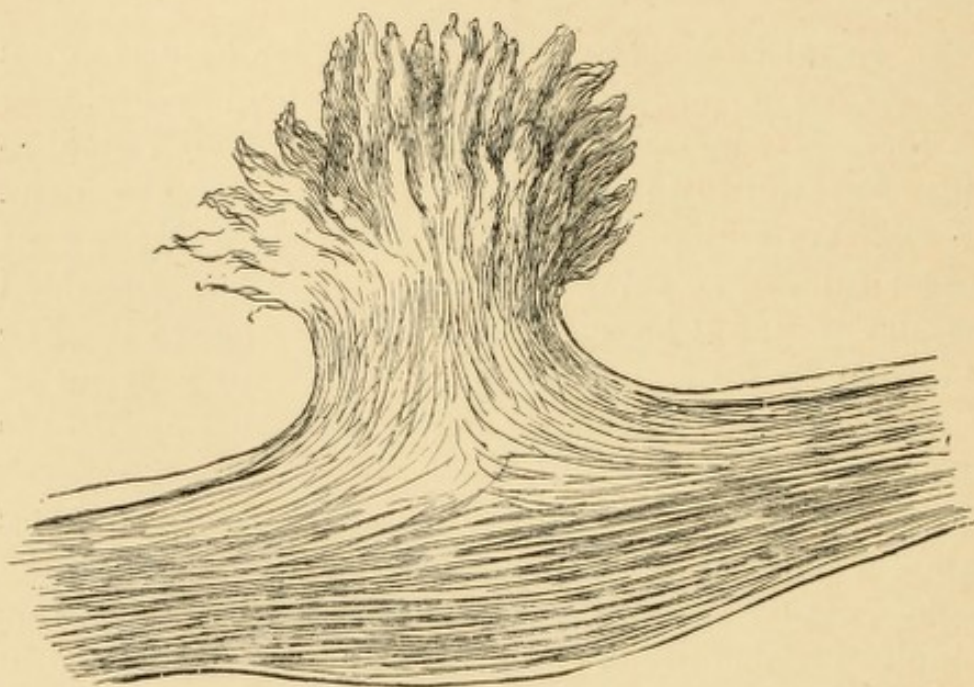
FIG. 10.



A villus-covered carcinoma, showing the short villous processes, the thick infiltrated submucous tissue, and the hypertrophied infiltrated muscular layers.

Should supra-pubic cystotomy permit of a direct examination of the growth by means of the finger, two conditions will be noted. The tumours will be found either to be in the form of spongy, uneven, sessile masses (Fig. 10)

FIG. 11.

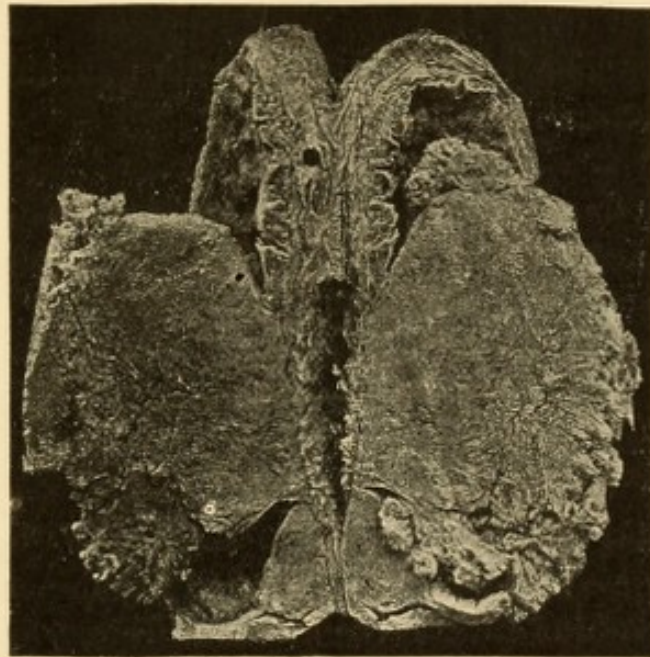


A villous papilloma with a thick carcinomatous base (malignant papilloma).

or as spongy growths with thick short pedicles (Fig. 11), and an area of hardness around the site of implantation.

When such tumours spring from the posterior wall they may attain a remarkable size, the pedicle being broad and succulent. Fig. 12 is a good example of this

FIG. 12.



Bladder cut down the front and turned back like an open book, to show a villus-covered carcinoma springing from the posterior wall. (Note the deep infiltration of the wall at the base.) (University College Museum, 1475.)

fact. Several of the largest tumours I have removed, averaging from $\frac{1}{2}$ lb. to 1 lb., were of this class.

The Clinical History of a Villus-covered Malignant Growth.

1. *The First or Latent Stage* calls for no remark.
2. *The Second or Hæmaturial Stage.*—The onset symptom of a villus-covered malignant growth is usually hæmaturia, and the hæmorrhage is strikingly like that

noticed as revealing the existence of a benign papilloma. Herein lies the first great difficulty in distinguishing on clinical grounds between the two diseases.

The bleeding *usually* commences between the ages of 50 and 60,* a little later in life than is noticed as marking the benign type.

Nor can any cause be usually assigned as a reason for the hæmorrhage, only a possible traumatic connection occurring in about 4 per cent. of the cases. The onset bleeding, moreover, is very rarely profuse, and if it is severe it is generally traceable to some unusual strain or indirect violence.

Generally it is slight, easily controlled, subsiding in two or three days, recurring, as in cases of benign papilloma, spontaneously, and continuing intermittently with increasing severity and increasing obstinacy until the stage of cystitis is reached, or until the bladder is irrigated and cystitis is induced artificially by catheter infection. The hæmorrhage then subsides to a great extent.

Renal Pain and Stream Impediment.—Villus-covered malignant growth evinces a marked tendency to grow around and occlude the orifice of the ureter† or urethra, and thus cause in the course of time, though by a different mechanical force, that renal pain and stream obstruction to which attention has been called under the head of papilloma. It is, however, rare to notice these symptoms early in the history of the case.

The duration of the hæmaturial stage is very variable, nor can it be accurately determined, because this class includes cases which have probably commenced as benign

* Age at onset of hæmaturia in villus-covered malignant growths:

Before 30	5 per cent.	Between 50 and 59 ...	38 per cent.
Between 30 and 39 ...	16 ..	„ 60 and 69 ...	18 ..
„ 40 and 49 ...	21 ..	After 70	2 ..

† It is not uncommon in removing luxuriant growth from the ureteric area to find a channel running through the entire thickness of the mass. Mr. Targett suggests that this channel is the mucous membrane of the ureter itself everted.

growths, but which subsequently have taken on malignant action. Thus the hæmaturial stage is noted in individual cases as continuing for six, seven, nine, ten, twelve, fifteen, even twenty-two years. Putting these exceptional cases on one side, the duration may be considered on an average to be about three years. Many, however, run through their second stage within the two years.

Two prominent causes apparently curtail the duration of this stage; one is an initial traumatism, the other early catheter infection.

The Influence of Traumatism upon the Hæmaturial Stage.

It will be noticed that when the initial hæmorrhage is profuse it is usually traceable to indirect violence. Probably the surface of the soft growth is split, and the resulting changes induce a stage of subacute inflammation. Superadded then to the hæmaturia are those symptoms which indicate cystitis. As an example :

Dr. Haynes Lovell sent me a patient, æt. 43, who five years before had lifted a heavy landau carriage and "strained himself." Half an hour later he passed a quantity of bright blood and clot. He had intense dysuria at once. The blood ceased in a fortnight, but the vesical irritability continued, and three or four days later he experienced a post-scrotal pain of some severity. The stream became small. He had right renal pain, and passed two small phosphatic stones like split peas. A quack diagnosed stricture, and "sprayed" him for eight or nine months, to the increase of his sufferings.

When I saw him he was breathless and bloodless. He smelt urinous, had incontinence in his sleep, and great frequency of micturition when awake. He had constant suffering in his anus, penis, and right kidney.

On examination the prostate was small and free; there was no cake-like infiltration, but the bladder felt "full." Cystoscopically a mass of villus-covered growth could be seen on the right base. In order to relieve him I performed supra-pubic drainage, taking the opportunity of examining with the finger. Masses of soft spongy

villous epithelioma could be felt entirely surrounding the right ureteric and the urethral orifice. All over the posterior and left lateral walls were secondary elevations of varying sizes of smooth epithelioma (? contact growth). He was greatly relieved, and I heard that he died five months after.

The Influence of Irrigation upon the Hæmaturial Stage.

Washing out the bladder—a manœuvre most suitable and most valuable for the stage of cystitis—is here uncalled for, and merely induces, and therefore anticipates, that inflammatory period which is so detrimental to the health and activity of the patient.

I have no hesitation in asserting that when once this stage has set in, the luxuriance of the growth becomes marked; the supra-pubic wound, if operation is subsequently undertaken, closes much more slowly, and often imperfectly; the recurrence of the growths after removal is infinitely quicker; the sufferings of the patient are greater, and the duration of life is greatly curtailed. Irrigation then in the hæmaturial stage is the worst possible policy.

The Third Stage, or Stage of Cystitis.—The symptoms of this stage differ somewhat from that noticed in the benign papillomata. There is often the same obstruction to the stream, due to the encroachment of the bladder orifice by the growth, the same straining to overcome it, the same frequent micturition, and probably the same penile pain. The same one-sided renal pain from back-pressure and pyelitis, with the occasional passage of phosphatic grit from one renal pelvis.

But, in addition, there is also that gradual loss of weight, which is not due to blood. There are certain renal symptoms which develop early the thirst, perhaps sickness, and the marked failure of strength. Moreover, there are those severe symptoms which are due to the filling up of the vesical cavity and to the infiltration of

* Causes assigned: Lifting a heavy weight, shifting weights, a fall straddle-wise, hurrying to catch a train, severe mental shock, etc.

muscle layers beneath the growth. Chief among the former is formation of phosphatic crusts which fret and irritate the bladder, exaggerate the cystitis, and accentuate the sufferings of the patient. Prominent among the latter is that distressing, often agonising, spasm of the irritated muscle tissue. Finally, if the patient does not succumb soon enough, those symptoms induced by secondary deposits are superadded.

Typical Cases of Villus-covered Malignant Disease.

Case 1.—J. P—, æt. 60, under Dr. J. H. Keay, of Colne, Lancashire. I was called May 2nd, 1893, to this gentleman, who had had during the last year three separate attacks of profuse hæmorrhage, each of which had been the direct result of some indirect violence. On each occasion the loss was very great and difficult to arrest. There was no frequency; no pain. When I saw him he was bleached and listless. The bleeding was alarming. There was no vesical irritability or pain. His pulse was very soft. On obtaining leave to operate I cystoscoped, and discovered a villus-covered epithelioma, about the size of a walnut; it was situated on the left side of the base. I hesitated in the enfeebled state of the patient to do supra-pubic cystotomy, but performed perineal section, and removed the growth with long forceps. The core or base was left.

I have only been forced to use the perineal route three times on account of profuse hæmorrhage and profound shock. It has very little to recommend it. With increased experience I prefer supra-pubic cystotomy.

The bleeding was checked in a few hours, and he was in the country in five weeks, being up and about at the end of the third week.

Five months after the operation he passed a clot, then blood, but was in "better weight and physical health than he had ever been in his life." At the end of ten months the hæmorrhage was severe enough to necessitate interference, and supra-pubic cystotomy was performed on March 17th, 1894, the growth being removed as thoroughly as possible. Subsequently he had pain in the left kidney, and five attacks of left renal colic in June, but there was no fever or dry tongue. He became emaciated. The bladder symptoms gradually returned; pain was subdued by morphia; the rectum became involved, and drowsiness and coma ensued.

He died end of November, 1894, eight and a half months after the supra-pubic cystotomy.

Case 2.—E. L—, æt. 53, was sent to me by Dr. Kennedy, of Plaistow.

Onset.—Three months before I saw this patient he was in perfect health. One morning at that date he passed blood at the end of micturition. He noted that at the commencement of the stream the urine was natural, but it was bright red at the finish. In two days' time the bleeding ceased. There was neither frequency nor pain. A fortnight after, dark red blood appeared intimately mixed with the urine. This lasted two days. It again ceased, and again recurred. The hæmaturia was throughout symptomless. Prostate small and firm, not hard. Vesical wall not infiltrated.

Examination.—Cystoscopy. Bladder held ten ounces easily. The mucous membrane was healthy except over the right ureteric orifice. Here a heavily stalked succulent growth, the size of about half a walnut, was found. Covering its surface were brownish necrotic (?) villi. Its character was that of an epithelioma. The prostate was a little dense to traverse with the cystoscope; but the bladder base was non-infiltrated.

Operation.—In the hopes of removing this with the mucous membrane I performed supra-pubic cystotomy. It was easily removed through the caisson, and the hæmorrhage checked with an application of iron. Healed rapidly.

Mr. Targett reported the specimen to be a villus-covered malignant growth.

Six months after the operation he came to me complaining of pain in his *right* leg, of pain in the glans penis after micturition, with shooting pain in the rectum. The stream was shot out three or four feet at first, but it dribbled down quickly, and it needed a prolonged effort to finish. Frequency every two hours. Two days later the right leg swelled up, apparently from plugging of the femoral vein. I at once examined for rectal infiltration, and found the right side of the prostate and the adjoining base of the bladder were fused and like a stone in hardness. It was so thickened, and the swelling projected backwards so greatly, that I could not get my finger over it. The œdema of the leg subsided, but his vesico-rectal pain increased; the supra-pubic scar opened and urine, mucus, and blood were ejected from it and from the urethra every half hour, with intolerable pain. He died nine months after the operation.

Notes on Atypical Cases.

In describing the most usual clinical history of villus-covered carcinoma, I have alluded to the onset symptom as being hæmaturia. As in the benign group, so in this, there are of course exceptions to this rule. In 15 per cent. of the cases the first symptoms were irritability of the bladder and some penile pain, blood occurring later. With these onset symptoms the growth was found somewhat more akin to infiltrating carcinoma, in that the tumour was tough and its base was hard, and a little cystitis had occurred in its neighbourhood.

Illustration.—J. M—, æt. 60. Two years before the cystoscopy he began to have frequency and a little pain in the glans on urination. The stream was good. Three months later he passed bright red blood. The hæmorrhage ceased and recurred. A sessile villus-covered growth was found post-trigonally. There was evidence of surface infiltration. I removed it supra-pubically, and it was reported to be a very vascular villous carcinoma. (Targett.)

But in 10 per cent. an impeded stream formed the onset symptom, and in these a pedicled growth fell on the neck of the bladder and blocked the orifice, the tumour being tough enough to grow to the requisite size before its surface became eroded.

Illustration.—R. J—, æt. 41. Eighteen months before the cystoscopy he began to experience a difficulty in urination. After starting water it stopped. Frequency ensued, especially during the night. Pain appeared in the rectum at the commencement of the act, and in the glans after the act. Bleeding also appeared. At first it was slight, and afterwards became severe, with clots like thick fingers. For twelve months he has had incontinence of urine at night at intervals. He has lost flesh the last few weeks,—one and a half stone. He is thirsty and anæmic. Frequency every half hour day and night. Urine 1005, acid. The base of the bladder feels thick and “filled” with a hardish orange-shaped mass.

Cystoscopy.—A smooth growth on right side; it was removed supra-pubically, and filled a 2-oz. measure. Targett described it as a “villous carcinoma.”

Indications for Operative Removal.—These had better be discussed later (p. 80).


CHAPTER IV.

"BALD" MALIGNANT GROWTH.

It is neither the object, nor is it within the scope of this short clinical study, to describe the clinical features of the *rarer* forms of malignant disease of the bladder. The sarcomata in childhood and the adult, the acute carcinomata which acquire an enormous size in a few weeks, malignant growth arising in a diverticulum of the bladder, —such and like rarities are so seldom encountered that they may be considered pathological curiosities, and special treatises should be consulted if information is required concerning them. This chapter contains a brief consideration of the early stages of what is commonly known as "cancer" of the bladder, and of that group which is "bald" or not covered with villous processes.

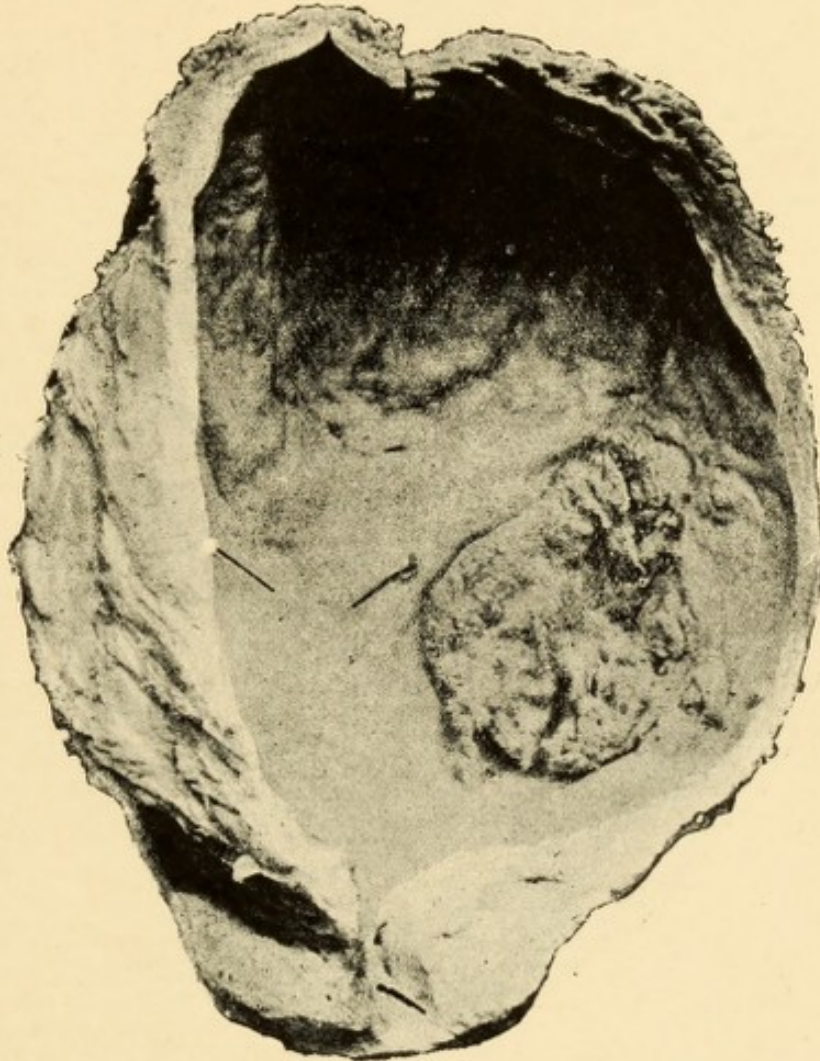
"Bald" growth will be found to differ remarkably from villus-covered malignant growth in the character of its onset symptoms, in the rapidity of its course, and in the small chance offered by operation for its relief. Why this accident of a covering should split off two forms of malignant disease is not apparent. There is no doubt in my mind, however, that this point of cystoscopic difference should neither be overlooked nor under-estimated.

Bald Epithelioma.—When epithelioma attacks the mucous membrane of the bladder its energy is generally expended in one of two directions. Either it rapidly interpenetrates the wall of the bladder, infiltrating it early and deeply, or its activity falls upon the surface and is displayed in tumour formation, and under this latter condi-

tion it is not until a later period that the deeper structures of the wall are implicated by extensive downgrowth. 

The following two equal-sized photographs will illustrate this statement. Fig. 13 represents a squamous epithelioma from Guy's Museum (Spec. 1794), arising from the

FIG. 13.



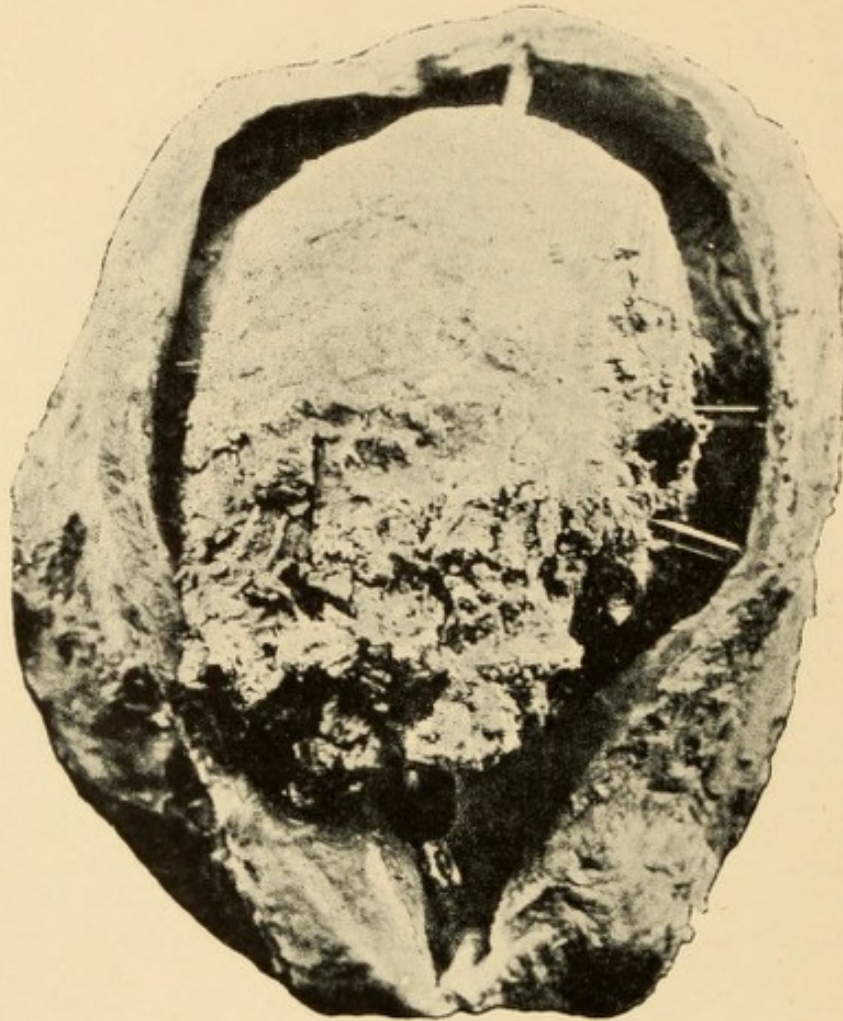
Flat patch of infiltrating squamous epithelioma.
(Guy's Museum, No. 1794.)

left ureteric area of a man. It has eaten deeply into the subjacent wall, its vesical surface being flat and necrotic. Fig. 14 represents a typical squamous-celled epitheliomatous tumour arising from the posterior wall of the bladder. The mass appears to have been very vascular,

and its anterior and lower part is soft and broken. The history was only of six months' duration.

Now as the former class—the infiltrating group—are the more common, and as the invasion can often be easily detected by rectal examination at an early stage of the

FIG. 14.



A large squamous epitheliomatous tumour from posterior wall of bladder.
(R.C.S. Museum, No. 3703.)

disease, and as, when infiltration is discovered, it settles the diagnosis and prohibits all instrumentation, I venture to allude to this feature in detail before discussing the cystoscopy and clinical aspects of either group. There is also a pitfall in the rectal examination of the other group—of the tumour-forming epitheliomata, which should

be alluded to. It consists in the apparent burial of the prostate by a large intra-vesical soft growth.

NOTE ON RECTAL EXAMINATION IN MALIGNANT DISEASE.

Infiltration of Wall—Burial of the Prostate— Prostato-vesical Cuirass.

Infiltration of the Vesical Wall.—I have mentioned already * that a rectal examination should always precede a cystoscopy, and that the utmost gentleness should be exercised in conducting the exploration. Any rough pressure upon the base of a bladder involved by carcinoma may bruise or even break the cake-like deposit of hard growth, and induce hæmorrhage and cystitis.

The patient, having emptied his bladder and knelt upon a couch or bed with his forehead as close to his knees as possible, takes a deep breath and holds it for a few seconds during the examination. These manœuvres force the bladder base towards the pelvic outlet and render a wider exploration easier and more possible.

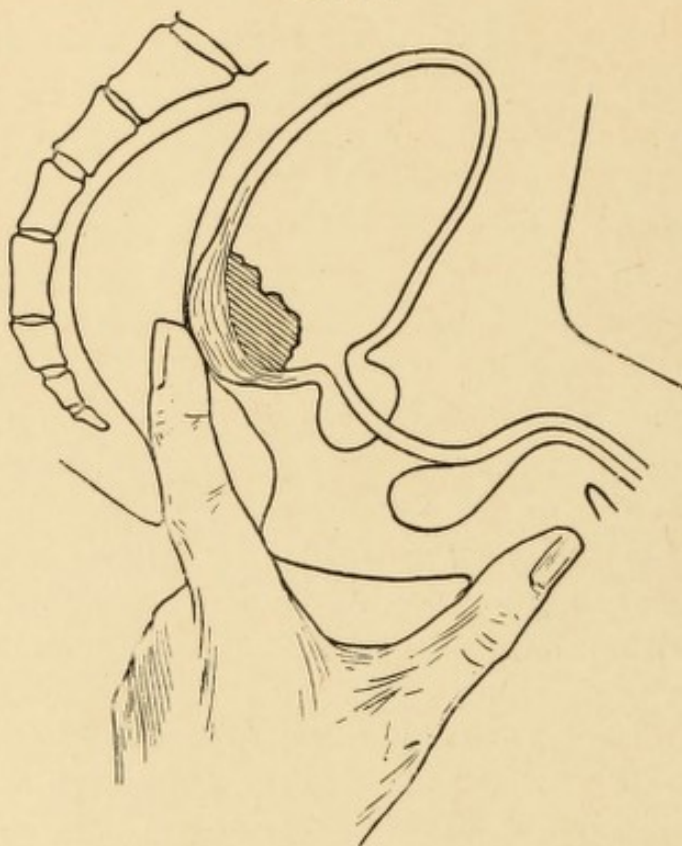
The position most often affected by infiltrating carcinomata is the posterior surface of the bladder. This corresponds to the post-trigonal area (Fig. 15). The finger discovers this region immediately behind the prostate; probably in every case it is accessible, for there are grounds for believing that the prostate is rarely enlarged in vesical carcinomata. The difference between the thin, supple, and depressible post-trigonal wall of health, and the thick, resistant, cake-like condition it assumes when the musculature is infiltrated by carcinoma, is so marked and so appreciable as hardly to merit description† (Fig. 16).

* Rule 2, p. 2.

† There is a distinct difficulty in eliminating senile tuberculosis of the vesicle, but this condition is extremely rare. I need not remind my reader that the vesicles lie more to the side; that they are not very distinctly *felt* even in health, still less are they distinguishable at the age when vesical carcinoma arises (Circ. æt. 60), for atrophy has set in; that if felt and spongy they are only encountered in the young adult, and then it is an

Moreover, light pressure on the induration evokes pain, and this is referred to those areas in which pain is habitually felt by the patient. Its most typical development is in carcinoma of the base of the *female* bladder. The entire surface of the vesico-vaginal septum feels transformed into a stiff, nodular, thickish plate, often like the

FIG. 15.



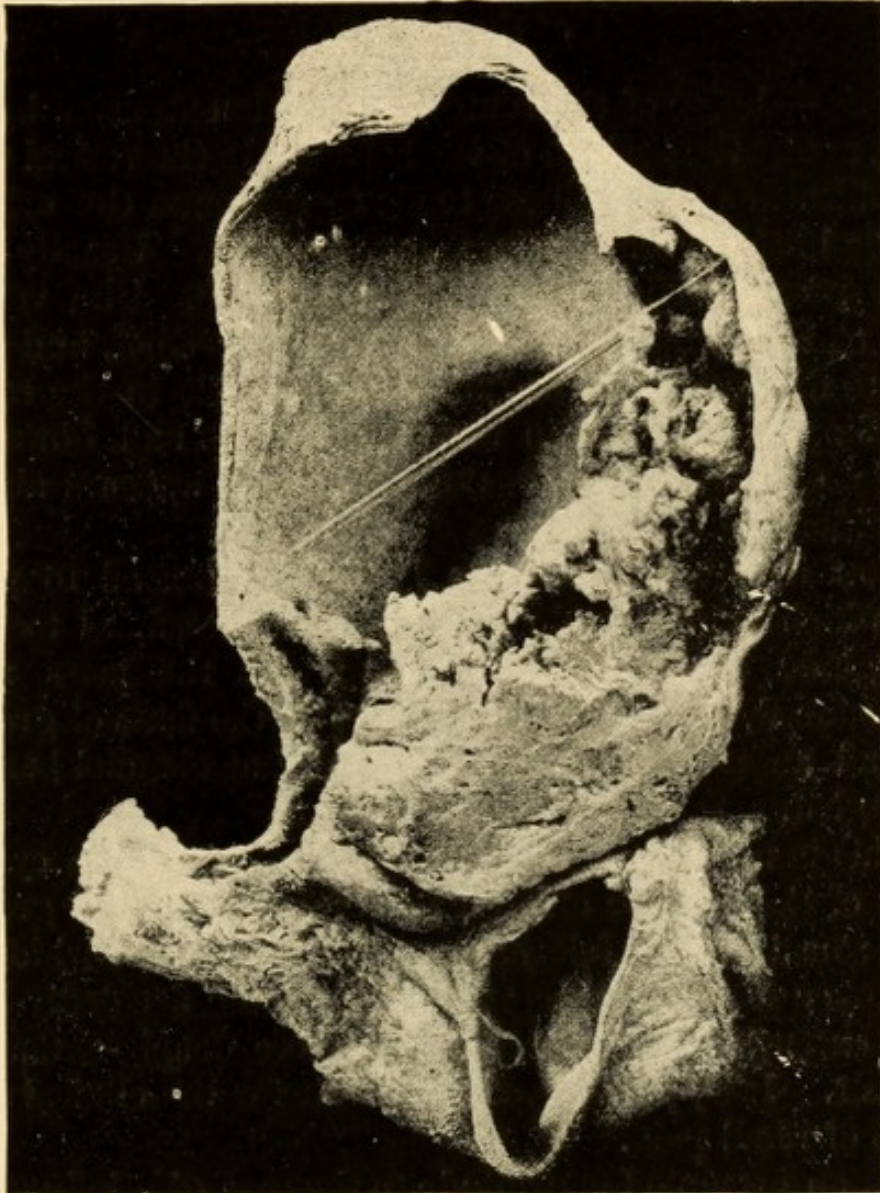
Finger detecting infiltration of the posterior wall of the bladder from growth spreading over post-trigonal area.

cuirass cancer of the female breast. If the post-trigonal area is felt lissom, the finger *must* be carried higher along the course of the ureters and across the superior or intestinal wall. Lastly, the patient is examined bimanually in the supine position, and if possible under ether.

How soon may infiltration be noted after the onset evidence of block of the duct. If they are hard and dense in the young adult they are probably tuberculous. Cf. Author, "The Rectal Contour of a Thousand Prostates," 'Brit. Med. Journ.,' February 18th, 1899, p. 395.

of bladder symptoms? I have several times found well-marked infiltration within two months of the commencement of the bladder symptoms—in many it can be detected

FIG. 16.



Soft spheroidal-celled carcinoma (primary) affecting base (R.C.S. Museum, No. 3797). A vertical section of a bladder and rectum. The prostate and lower part of the bladder are occupied by a solid growth, which has infiltrated the neighbouring structures, extending forwards along the corpora cavernosa of the penis, without invading the urethra, though it obstructed that canal by pressure.

Note by Mr. J. Targett.—The prostate is unaffected. Growth is primary in bladder. It appears to be a very soft, spheroidal-celled carcinoma.

within six months—in 50 per cent. infiltration was apparent before the end of the first year, and in 82 per cent. before the end of the second year.

A Possible Error in Prognosing the route of the Extension of the Disease.

Rule.—Judge of the route of probable extension by the pain, not by the *position* of the hardness in the vesical wall.

Infiltration of the base tends to surround the orifices of the bladder—the ureteric and urethral. Usually it is most pronounced at one ureteric orifice. The vesical part of this canal becomes gradually throttled, and pain due to distension of the renal pelvis is felt in the corresponding kidney. Pain in the left groin and down the inside of the thigh of the same side appears almost coincidently.

Now in my earlier cases I was accustomed to point out which kidney would first become affected. I took as my guide that side on which I felt the mass most pronounced, believing that the greater the mass of growth around an ureter, the sooner would that channel become strangled.

This is not always accurate in the absence of a cystoscopy of the ureteric orifices, for a more exuberant growth may sometimes be felt *per rectum* on one side, whilst on the other it is throttling the ureter more decidedly by a less extensive, less feelable, but more deeply-extending deposit. It is, perhaps, safer to wait for the clinical symptom of renal pain.

As an example I may allude to the case of a lady under Dr. James Jardine, of Richmond. The finger encountered a hard protuberant cake of carcinoma in the vesico-vaginal septum. This was very massy on the right side, whilst only a small tongue of growth could be felt around the left ureteric channel as it entered the bladder; but the small growth on the left side was the more dangerous for the patient complained bitterly of left renal, left groin, and

left inner thigh pain. The left kidney was moveable and not enlarged.

Nor should the size of the inguinal glands be considered as a guide to the side on which the disease is progressing fastest towards the kidney, for the glands of one groin may be shotty and involved, but the pain may be felt at the pubic spine, the inner side of thigh, and sciatic of the opposite side. It is best, here also, to trust to the indication which pain presents of the track of the disease.

The following axioms may be accepted :

1. The greater number of cases of bald malignant growth affect the lower third of the bladder and infiltrate the base **early** (70 per cent.).

2. Absence of infiltration does not mean absence of carcinoma ; it indicates only that the growth, if present, has not extended through the muscle layers ; and if the symptoms have been over two years in existence, it proves that the growth is indolent.

3. Deposit of hard carcinoma in a ring round the vesical orifice is not detectable *per rectum* in its early stages. A vertical stream and furious bleeding on gentle instrumentation are better indications for hard growth placed around the neck of the bladder than rectal examination.

4. The side on which the pain is first felt is the indication of the line along which the growth is extending.

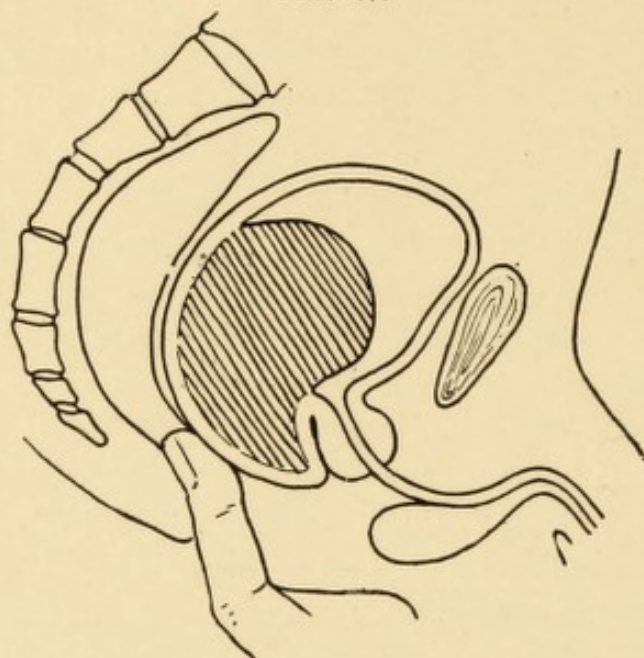
5. Vesical growth very rarely attacks and indurates the prostate, but hard prostatic carcinoma tends to break into the bladder.

Burial of the Prostate.—Large and soft vesical growths fill the bladder and depress the post-trigonal area, and thus obscure the outlines of the prostate.

Occasionally it will happen, when a large vesical growth occupies the bladder, that the finger will encounter an enormous mass in the region of the prostate, and that this gland will be supposed to be malignant. It should be remembered that very large soft growths of the mucous membrane may so occupy the cavity of the viscus that

they are literally pressed into the post-trigonal area, and overlap the posterior edge of the prostate; in fact, in some cases burying it almost entirely (Fig. 17).

FIG. 17.



"Burial of the prostate" by large vesical growth, so that on rectal examination the limitations of the prostate are lost in an uniform mass.

Thus Mr. J. Cashin, of Southsea, sent me a patient in whom I could detect no prostate at all, merely a huge, soft, even mass, occupying the position of that gland, and extending as far upwards as the finger could reach. Moreover, I could feel the bladder above the pubes extending half-way up to the umbilicus. This disappearance of the prostate was evidently not due to the pressure of residual urine, for I emptied the bladder of two ounces (its utmost capacity) by catheter before the rectal examination.

On supra-pubic cystotomy I found my finger in a cavity like a uterus containing the head of a child. I could sweep my finger between the large growth and the wall, and was able finally to locate a pedicle near the right ureteric area. I then tore out, piecemeal, a soft carcinoma weighing three quarters of a pound avoirdupois. After this

the prostate was found small, and the posterior wall soft and lissom. Patient was soundly healed by the third week.

Prostato-vesical Cuirass.—A burial of the prostate by a large removeable vesical growth is simulated slightly by a prostatic carcinoma bursting through its capsule posteriorly on to the back of the bladder and transforming the entire region which can be explored by the finger in the rectum into a projecting irregular stony mass of cancer.* Of course such a condition negatives any but soft instruments.

CLINICAL SKETCH OF THE TWO FORMS OF "BALD" EPITHELIOMA.

(A) *The Early Infiltrating Group, and (B) the Tumour-forming Group which Infiltrates Later* (cf. Figs. 13, 14).

I believe that the early infiltrating epithelioma will be met with much oftener than the tuberos or tumour-forming epithelioma. In my own work 84 per cent. were of the early infiltrating type, and a questionable 16 per cent. formed masses of soft epithelioma, which projected into and encroached upon the capacity of the bladder.

(A) *The Early Infiltrating Epithelioma.*—Although I make it a rule to avoid cystoscopy, or, indeed, any instrumentation if definite infiltration is found on rectal examination, yet cases of this disease have frequently presented themselves for diagnosis in the very early stages, before invasion had become apparent to the finger, and from these I have gained some knowledge of the earlier appearances of the infiltrating group. Months after, many of these cases were found to have become infiltrated.

* Cf. Author, "A Clinical Study of Primary Malignant Disease of the Prostate Gland," 'Edin. Med. Journ.,' July, 1899.

Cystoscopy.—In the very earliest period the cystoscopic diagnosis of this class is often very difficult. For instance—

A woman was sent to me in 1891 by Dr. Weakley, of Forest Gate, with a three months' history of cystitis. The capacity of the bladder was four ounces. The postero-superior and lateral walls had lost their sheen, and were covered with a delicate but distinct layer of mucus. The lower third of the bladder was distinctly altered. There was a patch of mucous membrane near the left ureteric orifice which was swollen and inflamed, and covered with a white phosphatic débris. "It is difficult," I wrote in the hospital notes, "to distinguish this from commencing epithelioma of the infiltrating type, but by turning the prism over on to its edge I see the border of the patch clearly. It has neither an upraised edge nor any rolled border; its surface is not eroded. I believe, therefore, that it is a patch of inflamed mucous membrane, irritated by the decomposing urine which is retained in a cystocelic depression which one can see at this part."

In May, 1894, two years after this examination, she returned to see me. The vaginal roof was infiltrated with malignant growth, and the patient's life for the intervening two years had, I learnt, been a period of constant and severe suffering. Nothing was attempted. She died on August 23rd, 1894.

If the cystoscopy is undertaken before the onset of cystitis the capacity of the bladder will be found somewhat diminished, but the greater part of the surface will be of a shining white, and the light will therefore be abundant. In front of one or other ureter, often encroaching on the trigone and creeping over its posterior edge, will be seen a *bald*, irregular, *nodular* growth of a dull red colour, similar to that of the inside of the mouth. It starts out in vivid contrast to the white colour of the posterior wall.

Three features may strike the observer. In the first place, the absolute sessility of the growth; then, its low elevation, the edge sloping off on to the adjacent healthy membrane; but more striking than these two aspects will be the cyst-like bodies which guard the edges or stand

out in crops from the surface. I find many expressions in my notes which are intended to carry some recollection of these little bodies. Thus, "cyst-like bodies, like a congenital cystic kidney in miniature, fringed one side of edge of the growth"—"many clear grapes in miniature"—"a double row of clear vesicles like miniature ranulæ"—"clear gelatinous nodules"—"myxomatous fingertips." They are not solely characteristic of growth. I have seen them at the edge of tuberculous lesions, and regard them as evidences of lymphatic or glandular obstruction.

Once the surface has ulcerated, and it does so *very early* in its clinical life, its aspect changes. The colour becomes more or less white in parts; thin films of mucus enwrap it; lizard skin cracks radiate here and there across the lobules. These cracks become filled with white phosphate of lime, and even a lobule or a group of lobules may be covered and concealed by a thick concave crust of greyish lime phosphate. This crust being loosened by ulcerative change falls on to the post-trigonal area, is swept away with the urine and passed. It should be recognised as an ulcer crust.*

Meanwhile cystitis has altered the character of the bladder surface generally. It is dull, of a deep red, it absorbs the light. Often the thick rugæ of the mucous membrane are tinged with blood, or smeared with mucus tracks as if a snail had crossed them, or they are plastered with white phosphatic deposit as if a limewash brush has been swept across them.

(B) *The Tumour-forming Group which Infiltrates later.*
—Should the growth be so situated on the posterior or superior wall (intestinal wall), or even on the lateral wall, as to be well away from the region of the neck of the

* I have often known these cup-crysts, and those flat crusts which are common to all forms of ulceration, whether simple, tuberculous, or malignant, to raise a suspicion of stone, and to subject the patient to frequent and severe soundings. It must be remembered that true stone rarely coexists.

bladder, the tendency to indolency and to localisation is greater, and the resentment to instrumental interference is less. Its chance of pedunculation is greater and therefore its life is longer. The reasons are obvious, for the growth is away from the orifice of the bladder. Now the neck of the bladder is a forcing-house for growth. The tissues are less lax, and are therefore easily traversed by invading growth. The blood-supply is abundant, and is frequently augmented by the congestion of the straining efforts made voluntarily or involuntarily by the patient to evacuate the viscus. But there is a still more potent hotbed factor in the bladder neck. All irritating substances in the bladder precipitate towards the neck—the acrid pus, the products of decomposition, all septic organisms and their toxins,—all these chemically irritate and accelerate the growth. Hence it will be found that when the tumour is situated away from this fertile area it has a different aspect and clinical history, and probably possesses a longer life.

Visually and digitally two forms are met with which fall into the category of tumour-forming epithelioma, the one (A) tough and operative and offering a chance of some alleviation; the other (B) soft and partially removeable, it is true, but permitting of no real benefit to accrue from the procedure.

(A) *The Tough-superficial Growth ; that which repays
Operation.*

This, in its earliest stage looks like a hard chancre. It is usually *behind* the ureteric line. It appears as a bald, sessile, uneven plaque slightly raised above the surface, varying in size from a threepenny bit to a shilling. Parts of it are distinctly nodular. It is rarely of a reddish colour in its entirety. Here and there a tag or filament shows that an edge or patch is ulcerated, whilst a sprinkling of white or grey phosphate of lime denotes that destruction is in progress. The area around the upraised edge may,

as in other carcinomata, show clear cyst-like bodies,—evidences, I believe, of deeper change glueing the surface growth to the submucous layer. The neighbouring ureteric orifice is often swollen and pouting. If the finger is introduced at this stage the plaque will be found hard and definitely localised, and remarkably *moveable* on the subjacent layers. It can then be completely cut away with a sweep of the knife or scissors. Of course it recurs, and usually within a year to a year and a half. *If it is situated higher up* on the intestinal wall it gradually glues the layers together until it reaches the peritoneum. At this stage it can be removed by resection of all the coats of the bladder, including the peritoneum. As a rule such growths are tough, indolent, and isolated, and repay removal.* It may be that the epitheliomatous ulcer which I have specially described,† is merely a stage of this hard-surface chancre-like growth, the centre becoming cupped by surface ulceration and interstitial contraction.

(B) *The Softer Tumour ; Partially Removable by Operation, but Rapidly Recurrent.*

The softer form of tumour formed by bald epithelioma is also more often found arising from the posterior wall behind the ureteric line. It is generally sessile, but may be thickly pedicled (3 per cent.). Visually it appears as a rounded mass, which varies in size from a walnut to that of a Tangerine orange. Its colour is white or greyish-white ; generally here and there are cracks like those seen in dried putty ; fibres, or clumps of fibres, hang from the surface, the result of maceration and necrosis, but there are no villous processes. The mucous membrane around is always red, gelatinous, and mucus-smeared. It is often possible to remove such a growth by “morcellement,” the tumour tearing like a turnip with very little bleeding ; but nearly always a thin base formed by the submucous

* Cf. examples of removal of such, p. 323.

† Author, ‘Ulceration of the Bladder ; Simple, Tuberculous, and Malignant,’ p. 78.

and muscle layers glued together by infiltration will be left behind, and from this the growth will quickly recur.

Occasionally septicity softens the tumour, and pieces slough off and lie loose in the bladder. These may deceive the cystoscopist, for they simulate multiple deposits.

In some cases a very curious feature will be encountered, a condition which I do not remember to have seen noticed in the literature. It is the manner in which some of the softer varieties of growth spread over the bladder surface. Instead of growing out into the viscus like a turnip, some over-run and over-spread the entire surface of the base with a thin leaf-like layer of soft carcinoma, so that the finger can be insinuated beneath the leaf-like growth and peel it off with ease. This mantle of overgrowth is not apparently dependent on suckers dropped from the under surface, as one would be inclined to expect. It suggests that soft outrunners have been flattened by urine pressure against the wall.

CLINICAL HISTORY OF THE EARLY INFILTRATING AND THE TUMOUR-FORMING EPITHELIOMATA.

Any attempt to separate these two classes by their onset symptoms breaks down at once. Both may start with hæmaturia, for much depends on the softness of the surface change. The stages, therefore, are the same as those remarked in the benign and the villus-covered growths, —a latent stage, a stage of hæmaturia, and a stage of cystitis. This is contrary to the accepted teaching, for it is still taught that in cancer of the bladder hæmorrhage is a late symptom, an error which I pointed out in 1889.*

* From the time of Gross (1876) and his compeers the opinion has been held that hæmaturia is early in benign growth and late in cancer. It is depressing to notice how slavishly such statements are copied and recopied. Gross, in tabulating epithelioma and benign growth, notes:

Epithelioma.

Hæmorrhage occurs in 75 per cent. of these cases, usually as a late symptom.

Papillary Fibroma.

Hæmorrhage of constant occurrence, and often at outset and without obvious cause.

—Gross, 'Diseases of the Urinary Bladder,' third edition, 1876, p. 146.

The Latent Stage.—This stage is not only insidious, but probably more pronounced than in the benign group, for we often find extensive infiltration almost as soon as the onset symptoms appear (cf. page 58).

The Stage of Hæmaturia.—The age at which the onset symptom most often occurs is, on an average, half a decade higher than that which obtained in villus-covered cancer, viz. at 55—65.*

Symptomless hæmaturia appears as an onset symptom in 60 per cent. of all the cases. There is nothing remarkable about the onset of the hæmorrhage if it be *spontaneous*. There is nothing in its character to differentiate the malignant nature of the growth which gives rise to it, from the benign character of the simple papilloma which causes a similar loss. It usually disappears in a few days, to reappear and to become intermittent; but at first it is "symptomless." But if it be traumatic in its origin, if some indirect violence, such as a strain in lifting or a fall, start a hæmorrhage, it is different. Often an explosion of symptoms marks the traumatism of the growth—the hæmorrhage is severe, and it is followed in a few hours or *days* by symptoms of cystitis—pain, pus, irritability of the bladder—points which I shall refer to again in alluding to the stage of cystitis.

One marked feature is present, and this stamps the course of the hæmorrhage of spontaneous origin with a suspicion of malignancy; it is the rapidity with which other vesical symptoms appear. Within three months or six months from the onset of hæmorrhage, half the cases have entered the third stage—the stage of cystitis. The only exception to this evidence of rapid destruction of growth is when the tumour is situated well away from the base, on the posterior wall, or on the superior (intestinal) wall. Here a malignant growth may have a

* *Æt.* 35 to 44 = 10 per cent. of the cases.

„ 45 „ 54	= 30	„	„
„ 55 „ 65	= 48	„	„
„ 66 „ 72	= 12	„	„

lengthier course, taking two to three years before entering upon the third stage (cf. page 65, B). Such, however, are rare, and only form 4 per cent. of the cases.

Two rules may be framed :—“The further away from the bladder neck, the more the surface only will be implicated, and the longer will be the duration of the stage of symptomless hæmaturia.” Another can be formulated thus :—“The softer the surface growth, the more profuse the hæmorrhage will be, but the less pronounced the pain. The denser the growth, and the nearer it is to the base of the bladder the less the hæmorrhage will be, but the greater the pain.”

Pain.—Before the hæmaturial stage is well over, ominous signs of infiltration appear, in the form of frequency of urination and pain. Frequency of micturition denotes that an area of the bladder surface is altered and “stiff,” and that it thus resents the stretching of ordinary distension. There will always be some penile pain after urination, but this is not characteristic. It is the “constant” pain in other regions which is independent of micturition which affords an important clue, both in diagnosis and prognosis. The practitioner should, therefore, be on the alert to note the position of the extra-urinary pain, as it is an evidence of nerve compression.

It will be frequently observed that in men the pain is at first *one-sided*: one side of the supra-pubic region, the inner side of one thigh, one groin, one hip, one loin (Figs. 18 and 19). In women it is frequently supra-pubic; in fact in this sex pain above the pubes is often an onset symptom.

Now these unilateral pains point to the position of the growth; thus, for example, right- or left-sided supra-pubic pain indicates growth starting in the corresponding ureteric area. When renal pain is superadded, it may be correctly surmised that the growth is extending around the ureteric orifice and adjacent channel.

Inner thigh pain, and pain in the obturator nerve area demonstrates that invasion is progressing towards the

prostatic capsule, and affecting the lymphatic glands near or at the point where the obturator nerve leaves the lumbar plexus—that the growth has, in fact, a trigonal

FIG. 18.

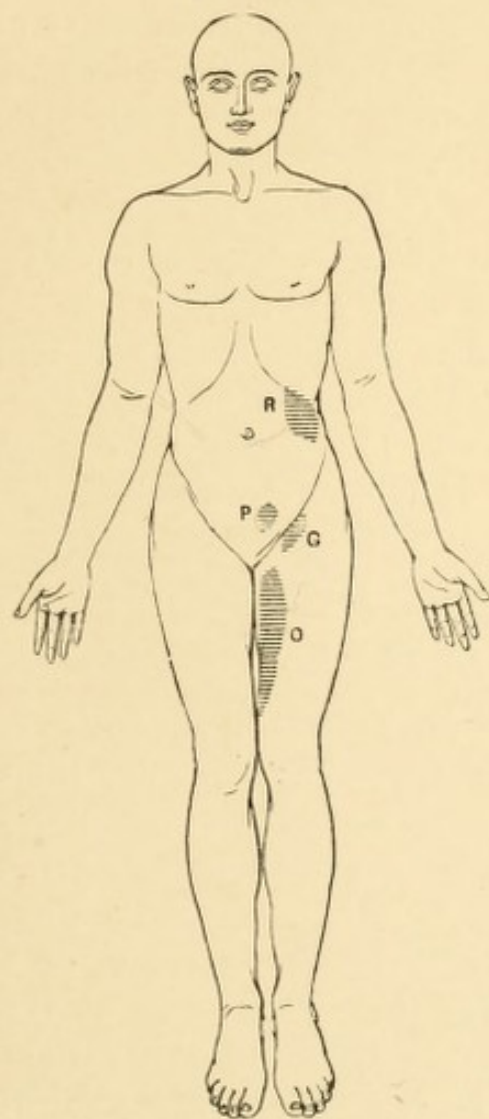


FIG. 19.

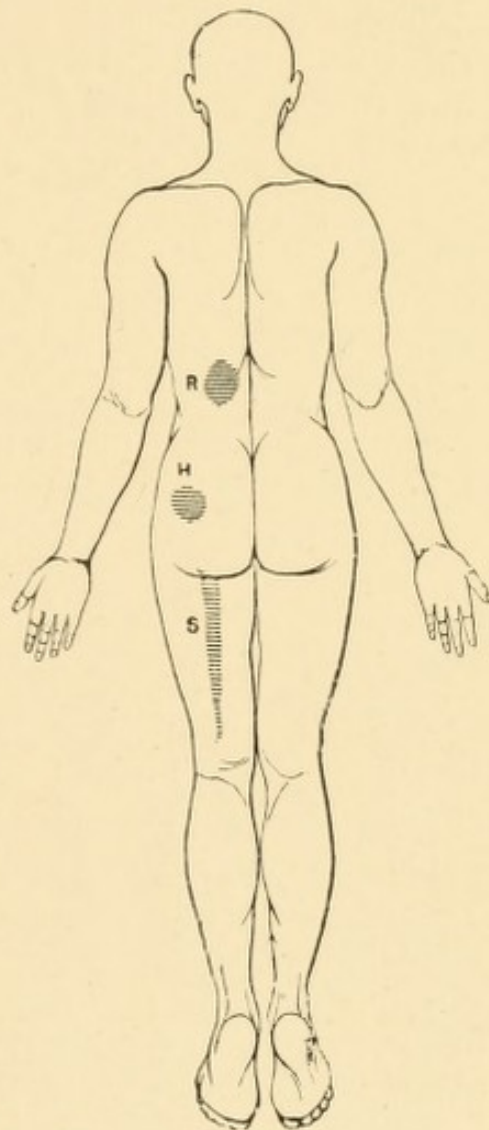


FIG. 18.—Shaded areas mark the positions of pain (renal, pubic, inguinal, obturator) felt in the advancing stages of hard carcinoma infiltrating the base of the bladder.

FIG. 19.—Shaded areas mark the positions of pain (renal, gluteal, and sciatic) felt in advancing stages of hard carcinoma infiltrating the base of the bladder.

or a circumtrigonal situation. With this is associated, either coincidentally or consecutively, a groin pain, from lymphatic extension to this region.

Hip pain (on the gluteal region above the trochanter) points to a lateral wall extension.

Sciatic pains point to a secondary deposit in the lymphatic chains around the sacro-sciatic foramina compressing the plexus.

These pains indicate infiltration, and are irrespective of those other pains, such as perinæal and urethral, which are due to direct pressure of the growth on the neck upon vesical contraction, or of cystitis.

It is important to note how frequently the patient is forced into the "painful" stage by sounding, or even by the use of a catheter, employed merely to test for residual urine. Very rarely, indeed, does instrumentation, except cystoscopy, afford the slightest indication of the nature of the disease. If infiltration can be detected *per rectum*, I hold that the employment of stiff instruments is not only unsurgical, but evidence of culpable carelessness.

Atypical Onset.

A small proportion of cases (30 per cent.) do not have the onset symptom of hæmorrhage, but commence their clinical history by irritability of the bladder, and supra-pubic or penile pain, irrespective of urination. As often as not, the pain appears first, either as a burning, stabbing, or shooting supra-pubic and groin pain, or a wearing pain in the back, and the irritability of the bladder is in some instances the result of the patient passing water to relieve the pain. Hence, two clinical facts are salient features in the early history: First, the pain is extra-vesical, that is, it may be in the groin, or inner part of thigh, as well as in situations pointing to the bladder, such as the supra-pubic region, or *side* of penis, or perinæum.

Secondly, the pain is constant, not dependent for its presence or accentuation on micturition—nay, it often is at first relieved by urination.

There is nothing much to be said about the frequency

of micturition except that it is persistent, that it occurs night and day; that it is not accompanied at first by symptoms of cystitis (pus in the urine, or scalding along the urethra or glans penis after urination), unless the practitioner passes instruments; and that it is not due to residual urine, for this is not large, $\bar{3}j$ to $\bar{3}ij$, a fact which is suspicious of malignant disease in itself.

The duration of this initial stage is variable, often it lasts only a few months, but the third and characteristic symptom appears sooner or later in every case, namely hæmorrhage.

In 50 per cent. of these atypical cases hæmorrhage commences within six months of the onset, and the interval is rarely prolonged beyond the year. Moreover, it is noteworthy that with the appearance of the blood the extra-vesical pain diminishes, but the frequency remains the same. The hæmorrhage which occurs late in the case is very frequently *profuse*.

Sooner or later the third stage, that of cystitis, is entered, with its penile pain after urination, the increased frequency and urgency of the act, the muco-pus in urine, and the other distressing symptoms inseparable from the disease.

Note on Emaciation.

Noticeable loss of flesh generally appears before the cystitis. It may occur along with the earlier symptoms of the hæmaturial stage, and it then may be partly due to the loss of blood; or it may appear in the earlier periods of the irritable bladder group, and be caused partly by the pain and broken sleep; but when neither symptoms are marked, it is significant of hard carcinoma affecting the constitution by deteriorating the gastric and intestinal glands (Samuel Fenwick).*

The Third Stage of Cystitis.—I have mentioned that 60 per cent. of the cases enter their clinical life by presenting the symptom of painless hæmorrhage, also

* 'Medico-Chirurgical Transactions,' 1865.

that when induced violence splits the surface of a soft growth, not only hæmorrhage, but frequency of micturition and the penile pain of cystitis, ensue *at once* in a few instances. In other words, the damage evokes in a few hours an inflammatory condition which will remain until the termination of life. Not only does the rough use of a catheter or sound initiate this explosion, but even a hard motion, due to the exhibition of iron-alum or other astringent, may produce a precisely similar result.

Further, a certain proportion of the cases (10 per cent.) have no true hæmaturial stage at all, but plunge into the third stage at once—blood, frequency of micturition, urethral pain, and pus in the urine, all being noticed coincidentally.

The sufferings in the third stage are severe, often inexpressible. They are in direct relation to the *hardness* of the growth. The miseries of cystitis, of retention, of renal obstruction, of growth attacking the pelvic organs, all combine to form a picture of unrelievable agony. When the growth is very soft and rapid some suffer comparatively little. Even though the bladder becomes filled with soft growth, and the rectum invaded and semi-occluded, yet pain is, in rare instances, quite under the control of morphia. It would seem as if the sufferings in some cases terminated directly the nervous and muscular elements of the bladder are transformed into soft carcinomatous growth.

Incontinence of urine is favourable, in that when the restless energy of the bladder neck ceases the local sufferings diminish.

Typical cases.

Early infiltrating epithelioma.—*The common type (60 per cent.).*—J. S—, æt. 41. This patient was in perfect health until three months prior to seeing me, when blood suddenly appeared in the urine. It was symptomless, and subsided in two days. A month later it recurred. Six weeks after the onset a slight pain occurred in his right renal region, coincident with an attack of

bleeding. Three months after the onset he had another bleeding, but at this time great irritability of the bladder was superadded, and constant pain was complained of in the right kidney and right groin. Lying on his right side relieved the pain in the right kidney. The prostate was small; a hard infiltrated knot could be felt behind the prostate in the back of the bladder, a little to the right of the median line. The diagnosis I gave was infiltrating carcinoma pressing on the right ureteric orifice and adjoining tube, and I advised that it should be left alone. A surgical *confrère* performed supra-pubic cystotomy, kindly inviting me to be present. A hard sessile mass of epithelioma, not ulcerated, surrounded the right ureteric orifice. This was attacked with forceps, and partially removed piecemeal; it cut like an unripe pear, and proved microscopically to be epithelioma. The incision never healed. I heard that another operation was undertaken two months after to empty the bladder of a large fungating mass, and that the patient died three days later.

Infiltrating epithelioma commencing with frequency and pain.—The less common type (30 per cent.).—G—, æt. 68. Two months before seeing me he began to pass water frequently, and was also troubled by a constant pain along the inner side of the left thigh across the pubes up to the left loin. This was increased by micturition. He also had pain after micturition at under surface of the glans penis and in the left testis. Frequency of micturition was every hour in the day.

One month after onset blood suddenly issued in front of the urine, and he had to pass water every quarter of an hour in the day, and five times at night. He then had four or five attacks of bleeding and occasionally passed little flakes or clots of blood.

Present condition.—The stream of urine forms a weak parabolic curve. *There is a dense hard cake of infiltration behind the left lobe of the prostate.* The lobes of the prostate seem a little hard, but are not enlarged. There are no perceptible glands in the groin; no supra-pubic tumour. He was not sounded.

It was noted that the left side of the bladder, the left side of the trunk, and the left leg, are the most painful. Morphia reduced the frequency, but not the pain. Gradually left sciatica ensued.

Patient lost sight of.

Early infiltrating epithelioma.—A traumatic cause for the onset of symptoms.—J. S—, æt. 44. Three months before seeing me this patient, being in perfect health, was unloading a waggon of

dung. The fork, weighted with the material, slipped in his hand; his body was jerked, and he "heard" something crack in his left side, close to the crista ilii. He was in severe pain, and passed blood in large quantities with much clot. This was quickly checked. He soon began to have imperious calls to urinate every hour in the day and eight times at night. Pain was also experienced in the perinæum after the act, and he suffered from a dull constant pain in the left groin and left supra-pubic region.

On admission into the London Hospital the urine was acid, contained pus, mucus, and blood; sp. gr., 1011. The glands in left groin were enlarged and hard (carcinomatous). *Per rectum* the entire posterior wall was found densely infiltrated with nodular growth.

A colleague now saw him and performed perinæal section. A hard epitheliomatous mass was found covering the left base and the left posterior wall. He died shortly after.

Early infiltrating epithelioma (the stages being merged) (10 per cent.).—A stout, anæmic woman, æt. 58, was sent to me with this history:—Two and a half months before she suddenly passed a quantity of dark bloody urine painlessly, but next day severe pain and great irritability of the bladder set in. Pea-sized pieces of gravel (grey) soon appeared in the urine with mucus and matter.

When I saw her she was urinating every two hours; the urine was that of muco-cystitis; the capacity of the bladder was five ounces. Commencing epithelioma was visible at the left ureteric region. There was no infiltration to be felt *per vaginam*, but it was detected in a year's time. She died four years after onset in great agony.

ROUGH COMPARISON OF THE VARIOUS GROUPS OF VESICAL TUMOURS.

The Benign—the Villus-covered Epitheliomata—and the Bald Epitheliomata.

The periods of life which are apparently the most usual for the onset of the symptoms characteristic of these groups of tumours vary. The benign show their presence most often between 30 and 45, the villus-covered epitheliomata between 45 and 60, whilst the bald infiltrating group affect usually the age between 55 and 65.

The clinical history kernels itself into whether a growth is soft and easily lacerable or not, and whether it will block either ureteric or vesical orifice.

The onset symptom in all is generally a *symptomless* hæmorrhage; but the proportion of the cases in which this onset symptom occurs dwindles as the tumours become tougher—84 : 75 : 60 in their percentages.

The softer tumours have prolonged hæmaturial stages, whilst it is noticeable that in proportion as the tumours become denser, so the hæmorrhages are sooner followed by symptoms indicating destruction of growth or infiltration of the muscular layers of the bladder,—these

FIG. 20.



A typical villous papilloma with a thin stalk and an uninfiltated base.

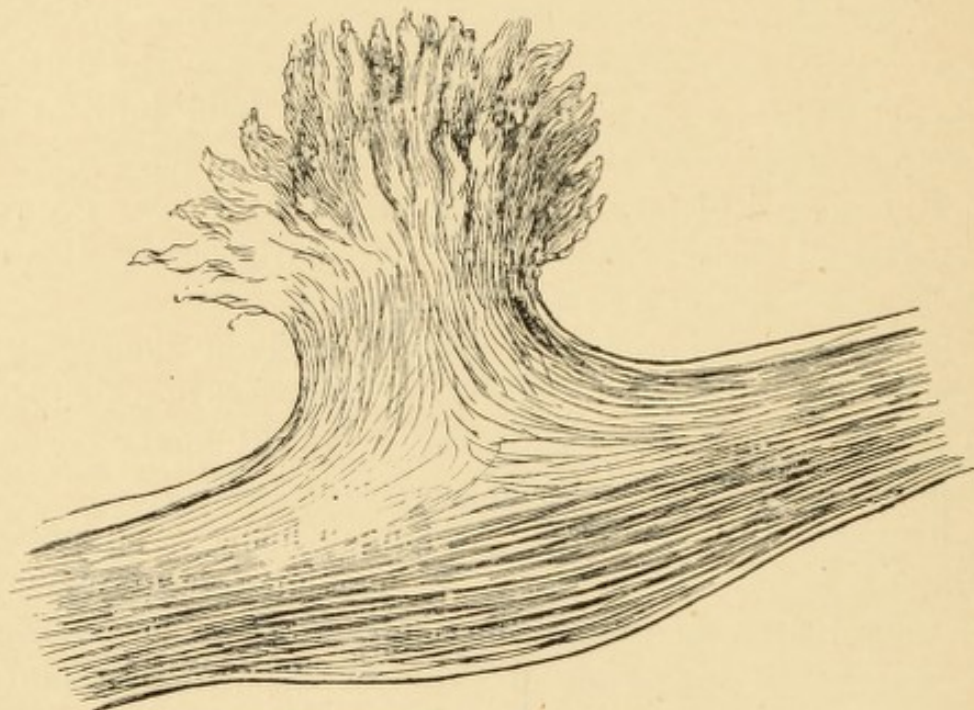
symptoms being irritability of bladder and pain experienced in and away from the urinary tract.

Most tumours, whether benign or malignant, terminate

the existence of the patient by inducing renal complications.

It is interesting to notice that the pedicles thicken and shorten as malignancy increases (Figs. 20, 21). It is rare to find any definite mass on rectal examination when benign papilloma is present and if the bladder feels "full" but not hard—the viscus having been just

FIG. 21.



A typical villous papilloma, thickening in the pedicle and basal tissues, becoming transformed into a malignant papilloma.

emptied by the patient, it generally points to a luxuriant, villus-covered carcinoma in an early stage. The inoperative class—those which infiltrate early—are usually detected by rectal examination at an early period, a hard, cake-like thickening being felt just behind the trigone.

These few points are set out statistically in the following table.

	Benign villous papilloma.	Villus-covered malignant.	Bald malignant.
Age	Half the cases commence between 30 and 45, only 22 per cent. after 50.	A decade higher; nearly half the cases commence between 56 and 60	Half a decade higher, between 55 and 65.
Onset symptoms	84 per cent. hæmaturia 8 " impeded stream 8 " irritability	75 per cent. hæmaturia 15 " irritability 10 " impeded stream	60 per cent. hæmaturia 30 " irritability and pain.
Cause for onset symptoms	Indirect violence, 6 per cent.	Indirect violence in 4 per cent.	Indirect violence, 31 per cent.
Character of onset hæmaturia	Rarely severe, 6 per cent.	Very rarely severe, 2 per cent.	Commonly severe, 33 per cent.
Intermissions of health	Common	Common	Uncommon, except in apical growths.
Fragments evacuated	Common, 33.9 per cent. Microscopy no indication of character	Less common, ? 17.2 per cent. Microscopy no indication of character	Rarely, unless the growth is septic and sloughs. Microscopy is diagnostic.
Character of surface			
Fimbriated villous	92 per cent.	82 per cent	—
Closely-packed blunt villous	8 "	18 "	—
Character of tumour			
Single	92 "	65 "	—
Multiple	8 "	35 "	—
Pedicle	72 "	47 "	—
Sessile	28 "	53 "	3 per cent.
Digital examination of rectum with an emptied bladder	No patch of hardening behind prostate	An infiltrated rectal wall rarely encountered except in the very last stage, but often there is the feeling of a "muscular" bladder or a "filled-up" bladder	Often encountered. Over 80 per cent. within 2 years.
Average life	?	7½ to 8 years	2½ years, exceptionally 5½ to 7½ years.

OPERATIVE INTERFERENCE OF VESICAL TUMOURS.

This short sketch of vesical tumours will not be complete without a brief reference to their operative treatment.

The mere death rate in skilled hands is not great. Thus I have operated on vesical growth 135 times, and have lost nine patients. Two of these deaths I trace to a fault in my own technique—for my drainage was insufficient.*

I have also had to drain at least on ten occasions, leaving the growth alone. This low death rate is not due to that operative timidity which avoids all but easy cases. Some of the growths I have removed have half filled a gallipot; some have weighed, when fresh and cleaned of blood and *débris*, a quarter to one pound or more; some were the size of a man's fist, and so tough that they cut like softened cartilage. I have had in one or two cases to crush the bases with powerful clamps—my entire hand being in the bladder in order to guard the ureters and the thinned bladder wall. Moreover, I have resected large pieces the size of the palm of a hand with and without its peritoneal covering. In nearly all these cases the cystoscope and digital examination had previously taught me what I might do with benefit to the patient. For the question is not the safety of an operation, but

* *Deaths* (numbers refer to list in Appendix, page 103):

- K—, villous papilloma of 20 years' history. Exhaustion. No. 4.
- E—, villous papilloma. Insufficient drainage. No. 11.
- G—, villous papilloma. Insufficient drainage. No. 39.
- T—, malignant. Bleached and exhausted; died second week. No. 58.
- M—, malignant. Far advanced. Exhausted. No. 66.
- P—, villus-covered carcinoma; four times operated previously at St. Bartholomew's. Exhausted. No. 94.
- I—, caught cold some weeks after return home and died of pyelonephritis. No. 120.
- W—, female; villus-covered carcinoma; a recurrent case. No. 121.
- K—, villous papilloma; an old patient of Guy's; had attacks of uræmia in that hospital. No. 20.

“Can the patient be benefited by operating? and will the procedure add to his tenure of life, or his comfort?”

I have no hesitation in saying that many of the operations undertaken upon cases of tumours of the bladder are useless, for they are unthorough. Nay more, when only the surface of the growth is removed the operation is worse than useless. The “munching”—to use a phrase of Sir Henry Thompson’s, who advocates the process—of a growth, whether it is benign or malignant, is not surgery. It must be cut away completely, *and the base of mucous membrane with it*, or the operation had better not have been attempted. Nothing less than a radical operation in the benign tumour can effect a cure; whilst a “munching” operation on a malignant growth is tantamount to a rapid and exuberant recurrence.

What are the guiding lines for operative interference? I submit—

First, that a radical operation, or even a cystoscopy, should not be advised in any case in which an infiltration can be felt per rectum; all such ought to be left rigidly alone. If the patient suffers from the terrible distress of an occluded vesical orifice, then supra-pubic drainage is the best that can be done. Perinæal drainage through growth is provocative of severe pain and vesical spasm.

Secondly, if the cystoscope demonstrates a *single* villus-covered growth, and hæmorrhage is getting beyond control, or if unilateral renal pain is suffered from, or if corkage of the vesical orifice is present, let a *finger-sized* incision* be made supra-pubically and the base of the tumour examined. If it be soft, whether it be pedicled or sessile, I advocate that it and its area of attachment should be cleanly removed, the supra-pubic opening being

* The reasons why a finger-sized opening only should be made in the bladder need enumeration. Everything that is necessary can be learnt by a finger-sized incision. Many *large* growths can be removed through it, the opening being stretched, not cut. With so small a wound the patient generally passes water on the 14th day, and is dry on the 21st. Moreover the contamination from exposure of a big wound to alkaline puriform urine is avoided, exhaustion is not so frequent, and the death rate is greatly decreased.

increased according to the necessities of the case. All hæmorrhage must be checked before the patient leaves the table, and the bladder should be efficiently drained for three days.

If there be more than one soft, apparently benign growth, each should be systematically removed, one by one, the positions having been previously located by means of the cystoscope. Perinæal cystotomy for a radical attack on vesical tumours does not deserve the name or cloak of surgery, and should only be undertaken to check a severe and prolonged hæmorrhage, the patient being too exhausted to permit of a supra-pubic cystotomy.

Thirdly, if the cystoscope shows evidences of sessile infiltrating growth or of sessile bald carcinoma, and yet no infiltration be felt by rectum or vagina, it is best in my opinion not to operate unless forced to do so in order to relieve blockage of the vesical orifice.

Fourthly, if the cystoscope fails—as it does in massive growth falling on the orifice of the bladder,—and the distress is urgent, a digital examination through a supra-pubic opening the size of a fore-finger will permit the operator to examine and find out if he is dealing with a single-pedicated carcinoma or not. In a small proportion of cases he will be able to remove very large growths with great benefit to the patient, as well as to afford a prolongation of life.

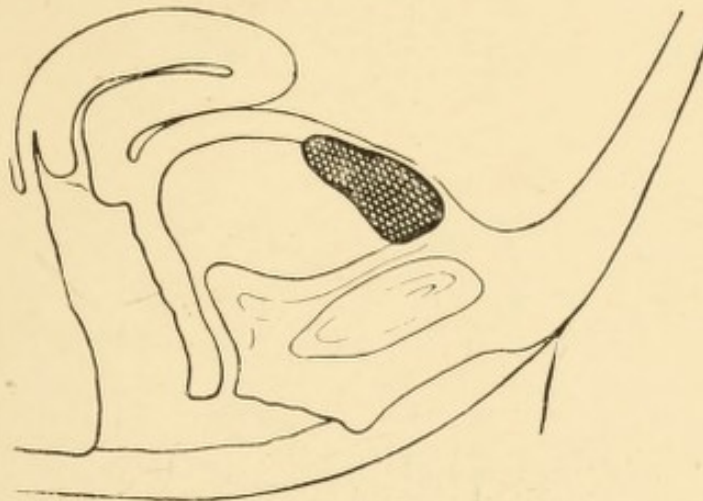
Fifthly, if the finger finds a malignant growth high up on the posterior or intestinal wall, circumscribed, indolent, and tough, the abdomen should be opened and the entire wall of the bladder removed with its peritoneal covering, the incisions through the wall going wide of the tumour. I published my first case in 1894,* but in this the peritoneum was not opened, for the growth was on the left lateral wall and base. The following case illustrates a postero-superior wall epithelioma of the indolent type, which I removed through the peritoneal route, resecting the upper quarter of the bladder in the process.

* 'Clin. Soc. Trans.,' 1894, p. 163.

Mrs. C—, æt. 65, was brought to me in October, 1899, by Dr. Harry P. Major, of Hungerford. The lady had been suffering from an intermittent symptomless hematuria for nine months. The urethra had been dilated by a gynæcologist, and a "papillomatous tumour scraped."

On cystoscopy a large, bald, sessile, infiltrating epithelioma was seen springing from the apex of the bladder (Fig. 22).

FIG. 22.



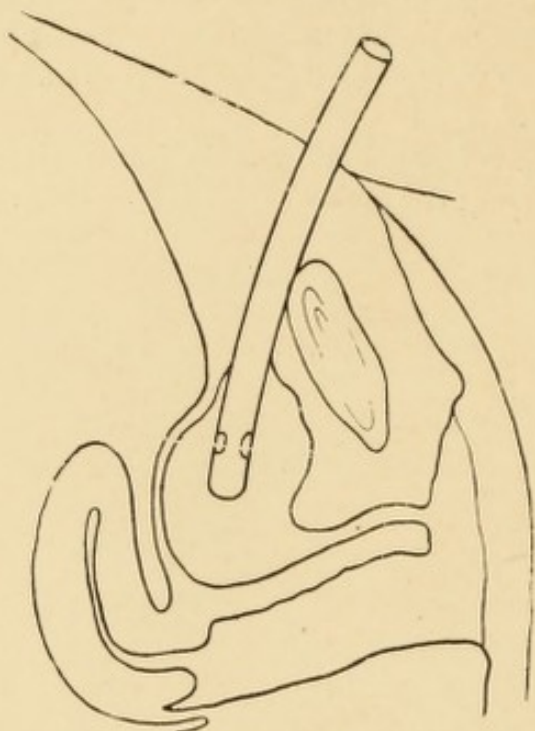
A large single sessile epithelioma occupying superior wall of bladder at apex. Mrs. C—.

A supra-pubic cystotomy was at once performed, and the peritoneal cavity opened. The growth was found to have penetrated the muscular wall, and to have invaded the peritoneum. The entire growth was therefore cut away, and with it a big piece of the superior peritoneal-covered wall, a fair margin of apparently healthy tissue being removed along with the growth.* When this was done the big gap was repaired in the following fashion. The V-shaped wound in the bladder left by excision of the growth was approximated by means of stitches passing through the peritoneo-muscular layers of that viscus—a hole being left in front for drainage.

The peritoneal layer of the abdominal wall was cut a little transversely, loosened, and pushed down as the bladder was drawn up. The lower edge of the peritoneum was then united across the back of the bladder, below the lower end of the repaired V-shaped incision, so that in case of the bladder stitches giving way the leakage would be extra-peritoneal (Fig. 23).

* Growth in R.C.S. Museum, No. 3705 A.

FIG. 23.



Mrs. C—. Growth removed along with apex of bladder ; peritoneal fold pushed back and stitched to posterior wall of bladder below incision.

FIG. 24.



Mrs. C—. Wound healed ; new apex of bladder adherent to supra-pubic region.

A drain-tube was inserted into the bladder supra-pubically, and another *per urethram*. The patient healed in a month with the exception of a small fistula, which was easily closed. On examination with the cystoscope, I found the apex of the bladder was drawn upwards and forwards. It was funnelled, and the folds resembled those of the neck of a bag tied up with string (Fig. 24). She reported herself in December, 1900, as being very active, and in perfect general and urinary health.

TECHNIQUE OF OPERATION.

I do not suggest that the following method of operating, which I have employed, should be strictly adhered to. I merely describe it as indicating the lines upon which my results have been obtained, and because a brief account may be of interest and perhaps of value to those who undertake to remove tumours of the bladder. The patient lies on his back.* The pubic region having been shaved and carefully asepticated, the bladder is filled with 8 oz. of boracic solution, introduced by means of a syringe or of an irrigator through a soft rubber catheter, the outer end of which is then clamped by means of a Spencer Wells's artery forceps. The syringe is again filled and adjusted to the catheter, and laid ready between the thighs. There is no need to use rectal inflation—indeed I consider it disadvantageous, as it leads to oozing from the growth.† The left forefinger is placed on the pubic bone, and a plunge with a sharp knife is made imme-

* I do not consider the Trendelenberg position necessary, though in certain cases of resection of large pieces of the bladder it is an advantage to have the intestines gravitating away from the bladder by placing the patient in this position.

† In my first case and, I think, my second, I used the Petersen bag for distending the rectum, but I found it not only useless, but liable to produce secondary cystitis by traumatism of the rectal mucous membrane. There are, moreover, cases on record of severe damage having been done by over-distension, such as rupture of the rectal wall and severe hæmorrhage.

diately above it through the supra-pubic region in the middle line.* The point of the knife enters to a depth of fully half an inch, and as it is drawn upwards lightly it makes a skin incision one inch in length. There is no necessity to attempt to define the middle of the *linea alba*; if the knife goes through a little of the *recto-pyramidalis* muscle so much the better. The finger is now introduced into the wound in order to ascertain whether the muscles have been entirely separated by the point of the knife; if not, and fibres still obstruct the point of the finger, another incision, deepening the first, is made, starting close to the pubic bone. The finger is again introduced, and the manœuvre is repeated until all inuscular obstruction seems removed and the finger rests easily on the posterior surface† of the pubes. With a slight upward sweep of the finger any overlying peritoneum is lifted from the front surface of the bladder. The assistant now injects another syringeful, and the elastic viscus will be felt to rise against the finger. The knife is laid aside from the right hand, the left forefinger resting still on the bladder; a small hook (Fig. 25)

FIG. 25.



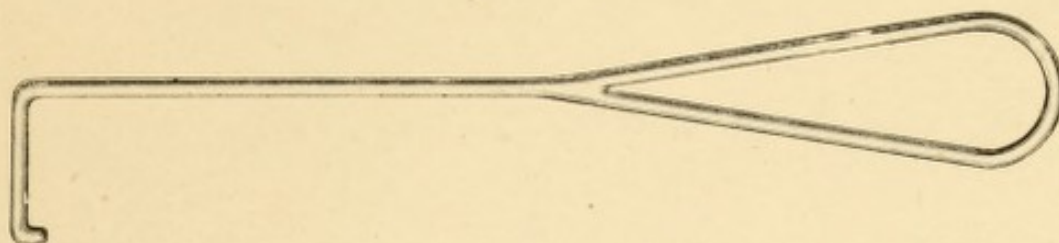
is guided along the finger, the bladder is caught up, and the hook handed to the assistant to steady. A sharp-pointed knife is then insinuated along the finger and plunged boldly downwards and backwards into the bladder. As the knife is withdrawn the finger slips into the hole which has just been made, for with practice the bladder incision can be made just to fit the left fore-

* The transverse incision renders an operation easier, of course, but it is rarely to the patient's interest to use this method of entering the bladder. It forms a severe, deep wound, while it places the detrusor muscle of the bladder *hors de combat*.

† Posterior, in the supine position of the body.

finger. The hook is detached, an elbow retractor (Fig. 26) is slipped into the bladder alongside the finger, the

FIG. 26.

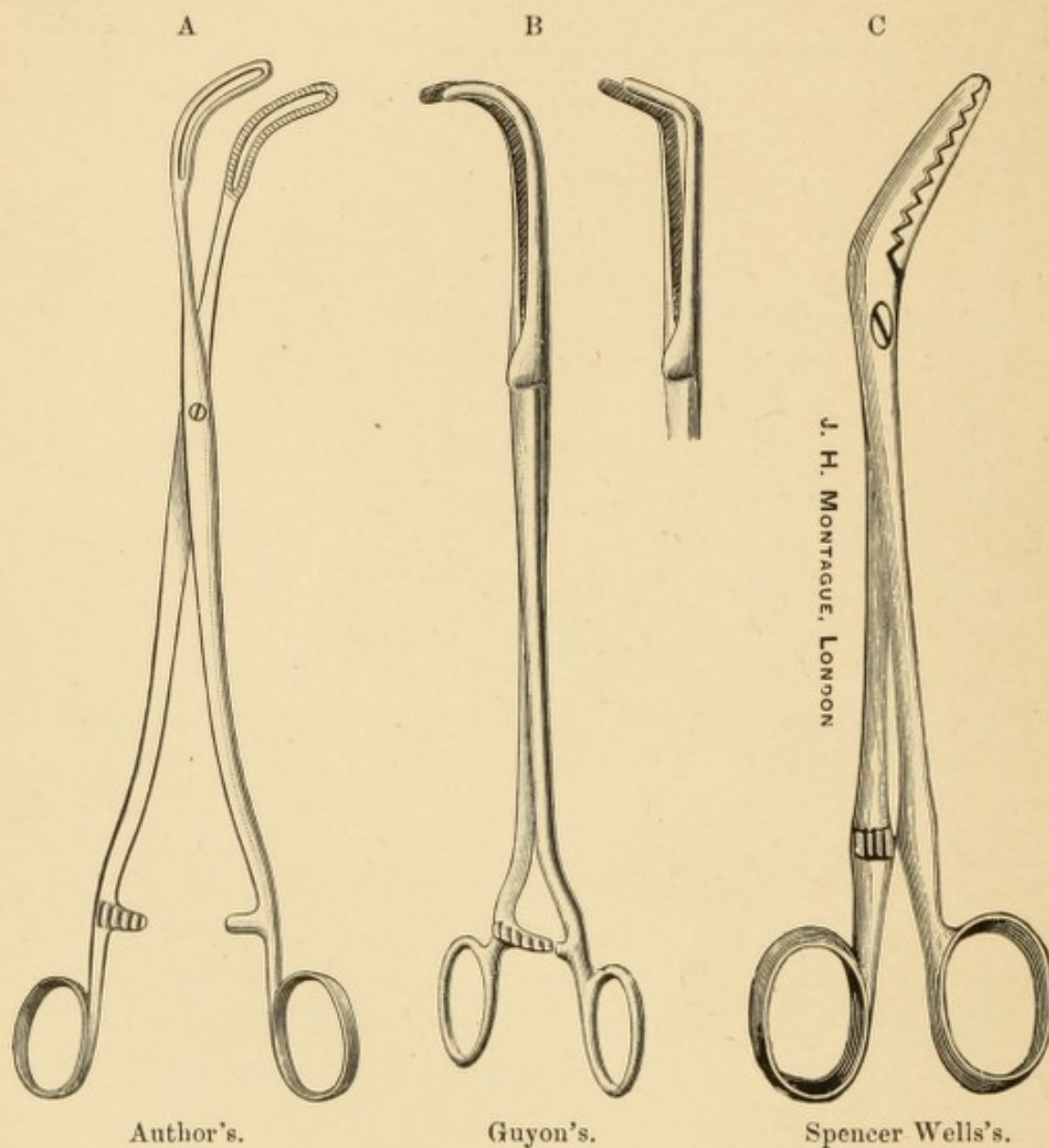


apex is hooked up, and the retractor handed to the assistant to hold steadily. The interior of the bladder is then explored by the finger, and if the cystoscope has been previously used the site of the growth will be at once reached. If the bladder lies deep in the pelvis and the finger cannot reach the growth, a little water is allowed to run out through the catheter by releasing the artery clip. It is, however, important to have some water in the bladder, in order to secure flotation of the growth, and thus estimate accurately the length, thickness, and exact position of the pedicle of the growth, if a pedicle exists. The next steps to be taken depend on the character of the base.

In Pedicled Growths.—If the operator feels that he can clamp the pedicle, he gives the tumour one or two turns with his left forefinger, so as to twist the pedicle. This is easily done if there is water in the bladder. The manoeuvre thickens the pedicle and renders it less liable to be subsequently torn off in the manipulations with the clamp. Steadying the twisted growth by pressing it against the wall with the forefinger, the operator takes a curved clamp (Fig. 27, A, B, C) in his right hand, of a strength and curve suitable to the position and thickness of the pedicle, and passes it into the bladder between the retractor and his forefinger. When it is well in the bladder the blades are slightly opened, and the pedicle caught and clamped, care being taken that the pedicle *only* is embraced between the blades. Once the pedicle

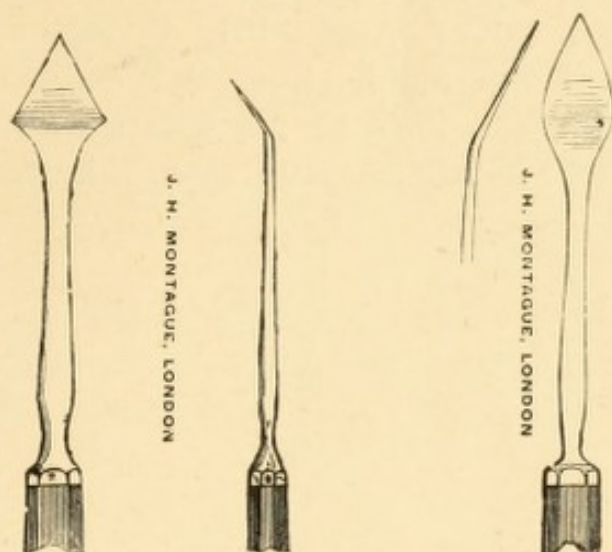
is clamped, any method of removal of the tumour will be sufficient. My own practice is to take a small spade-

FIG. 27.



knife, like an iridectomy knife (Fig. 28), to slide it along the concavity of the jaws of the clamp, and cut off the tumour; then to seize the freed tumour and to bring it to the surface and out through the wound, either by means of a long sponge forceps (Fig. 29) or by the aid of a bladder scoop. Should, however, the tumour be too big to get through the hole, the orifice of the bladder

FIG. 28.



Spade knives.

FIG. 29.

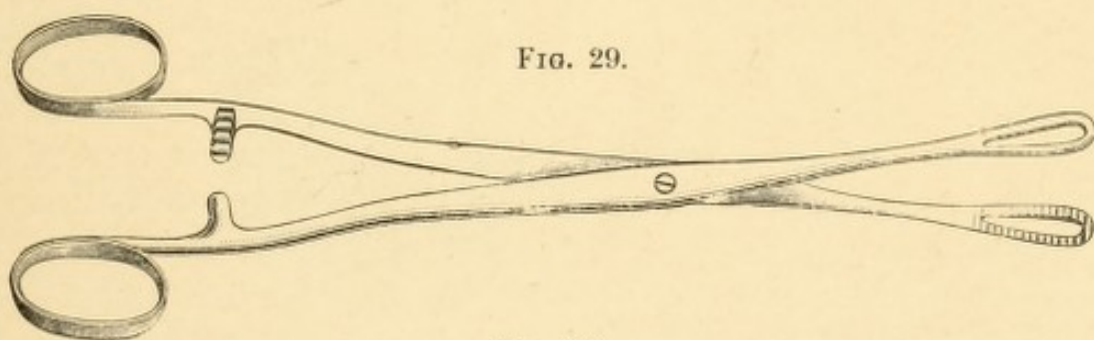
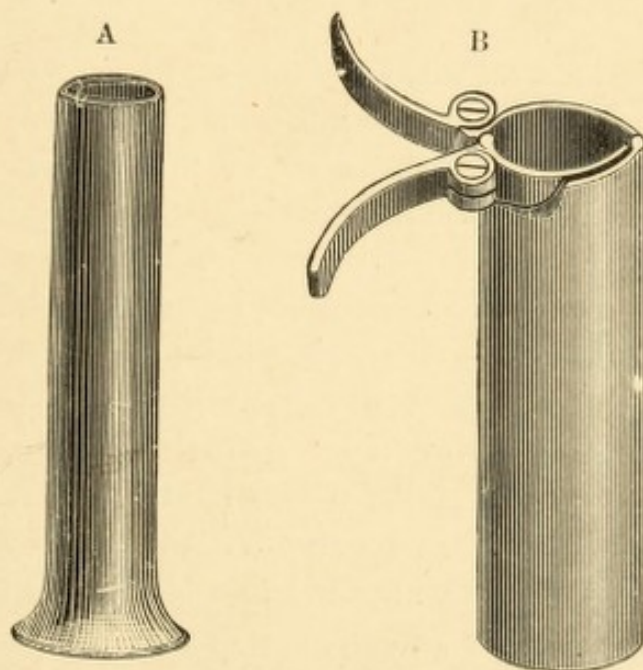


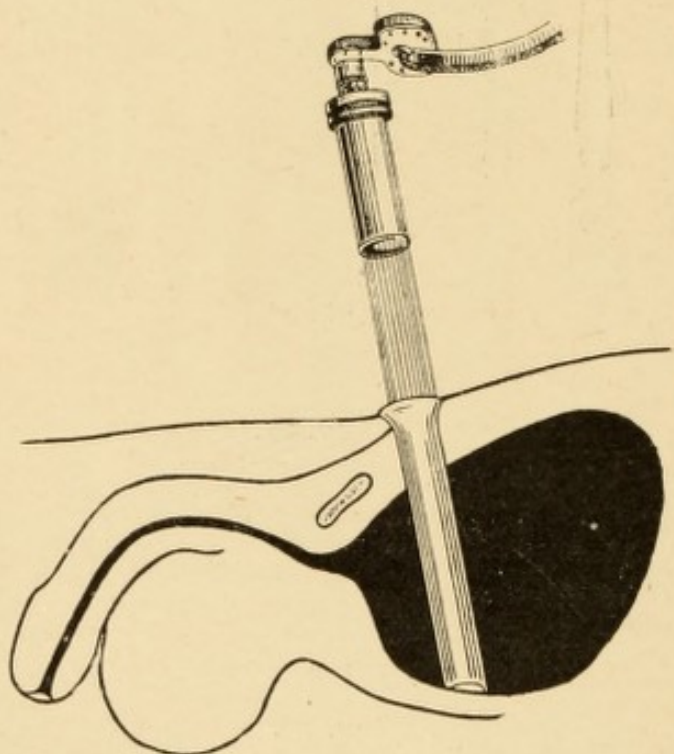
FIG. 30.



Author's caisson-tubes.

wound is slightly dilated by means of flat retractors, and a small caisson-tube (cf. page 101, Appendix A, Fig. 30, A, B) is passed into the bladder. A beam of light from a head-lamp is directed on to the mouth of the caisson* (Fig. 31), the growth is easily seen, seized, and pulled

FIG. 31.



Caisson in bladder; head lamp throwing rays on to bladder base.

through the caisson either whole or piecemeal. The size of the bladder opening and the size of the caisson must, of course, vary with the size of the tumour, but with patience and a little manipulation very large tumours can be removed through a small caisson. Occasionally I have had to dispense with the caisson, put my whole hand in the bladder, and crush a thick pedicle with my strongest kidney pedicle crushers (Fig. 27, C). The bladder having been completely freed from growth, the surgeon turns his attention to the stalk, which is still embraced by the clamp. His object is to remove the stalk and part of the adjoining mucous membrane thoroughly and without

* I use many forms of caissons; but an ordinary Ferguson's vaginal speculum is amply sufficient.

hæmorrhage. Various methods of procedure will suggest themselves to the mind of the operator. I generally remove the caisson-tube, pass my finger into the bladder, and take a thinner clamp and catch up the stalk and the adjoining mucous membrane, and cut away the first clamp. I then leave the second clamp on for about twenty-four hours. The bladder is now washed out from the urethra with weak nitrate of silver solution, the outflow being directed to one side into a receiver by a tin shoe-horn laid transversely across the pubes. Two drainage-tubes are placed on to the bottom of the bladder—one, fenestrated towards the inner end, and long enough to project well out of the wound; and the other, fenestrated throughout, is cut flush with the wound. The latter acts as a safety-valve, and clears any urine which may be subsequently forced into the post-pubic space. A stitch through each secures their retention. The safety-valve is removed at the end of twenty-four hours, at the same time that the clamp is withdrawn. The main drain is dispensed with at the end of the third day.

Memo.—In my earlier cases I used to bring all pedicled growths into view in the supra-pubic wound by pulling on to the clamp. Either the soft pedicle tore out and the bladder became flooded with blood, or the clamp crushed through the soft growth and left a bleeding pedicle behind. In a few instances, in which I was able to manipulate the tumour out through the wound without tearing the pedicle, the convalescence was unsatisfactory. The patient passed through a curious inflammatory stage, which I believe resulted from a separation of the mucous from the muscular layer of the bladder by dragging. In one or two patients, a crop of hard boils appeared all over the body, and caused much suffering and subsequent scarring. I attributed this to septic absorption, the result of a "dead space" being left in the submucous layer.

The growth is pedicled, but is surrounded by "satellite splashes."

When the growth has been removed in the manner I have described, a caisson is directed on to the bladder area (Fig. 31) where the small satellite splashes were observed by the cystoscope. Each splash can be distinctly seen by the aid of the electric light head-lamp, for its rose-red colour marks it off sharply from the paler background of the healthy mucous membrane of the bladder. The caisson end is pressed firmly down, so that the space of growth appears in the centre. Each piece is then bodily cut out by a firm crushing grasp of a cup-shaped forceps (Fig. 32). The raw base which is left is now dried and touched with a dab moistened in perchloride of iron (liquor), and the surface is pressed for a few seconds with a dry dab, and the next splash is similarly treated. The bladder is now irrigated and drained.

Sessile Growths.

If the growth be found sessile but *moveable* on the submucous layer, the incision in the skin and in the bladder must be enlarged, in order that the operator may gain a better access to the tumour. The operator must, however, first satisfy himself that the tumour is *freely* moveable upon the muscular layer, in other words, that it is not a deeply infiltrating cancer growth. The opening into the bladder having been increased, a large-sized caisson is passed into the bladder on to the growth, so as to expose one edge. A sharp-pointed, long-handled knife is then taken, and the mucous membrane is severed all round the growth, the caisson being moved along the edge of the tumour to facilitate the procedure. The area of resection having been thus mapped out, a pair of slender clutch forceps is then introduced through the caisson, and the edge of the tumour seized and pulled upwards. A sharp rectangular knife (Figs. 28, 33) (shaped like a palette knife) or rectangular scissors is

now used to cut the tumour away from the muscle layer, each step being performed under direct control of the eye. A separator, either straight or rectangular, is of use (Fig. 34). No anxiety need be felt about the hæmor-

FIG. 34.

FIG. 32.

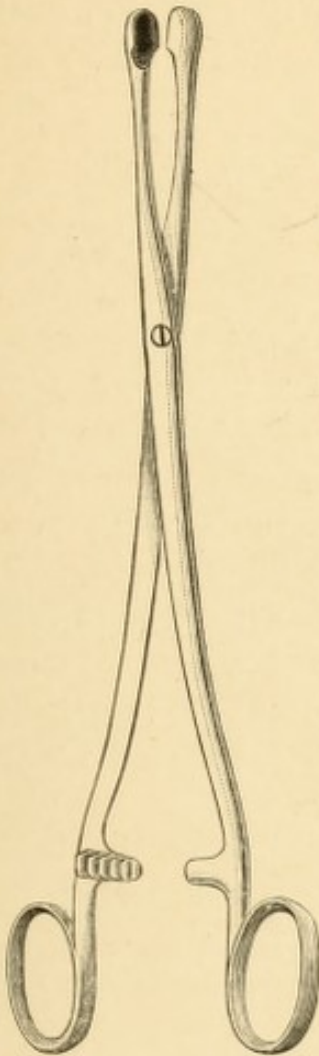
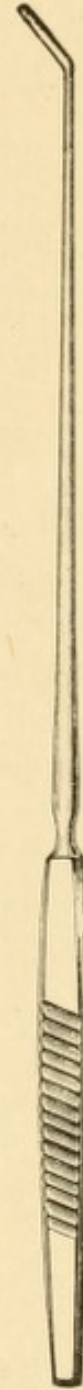
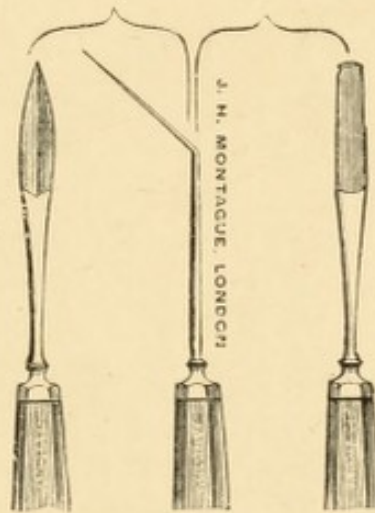


FIG. 33.



rhage, for as each vessel is cut through it can be readily picked up by means of fine artery forceps, and these can be left in the wound if it is found necessary.

The artery clips have their handles so constructed that they can be taken off and the caisson drawn over the blades.

If the operator objects to leaving in clips, he takes a long strip of sterilised white butter cloth, and pushes it along the caisson on to the bleeding area. He now withdraws the caisson, leaving the end of the gauze pack free outside the wound. Drain-tubes are now placed in the bladder. If any doubt of the control of the hæmorrhage exists, a dose of ergotin is administered subcutaneously before the patient leaves the table. The gauze is removed on the third day under gas.

Inoperative Carcinomata which compel Interference on account of Profuse and Persistent Hæmorrhage.

I have been forced on several occasions to interfere in order to save the patient from a death due to hæmorrhage from inoperative cancer, and I have for some years adopted the expedient of passing a small caisson into the bladder on to the bleeding area of the cancer, and of clipping away the entire surface of the growth down to the muscle by means of cup-shaped forceps (Fig. 32). The exposed surface is then treated with iron swabs, and the bladder packed with gauze if there is much oozing, and drained. I lost one patient in my earlier cases by doing this, but he was much exhausted at the time. (T—, No. 4, page 80.)

Resection of the Bladder.—If the tumour be hard, indolent, well circumscribed, and situated anywhere on the upper two thirds of the bladder, it can be removed by resection of all the walls of the bladder occupied by the growth.

I have already given instances, one in which the growth lay on the left lateral wall, and one in which the peritoneum was involved (page 82). These two serve to illustrate any difficulty which may arise.

Separation of the edges of the bladder wound may be carried out efficiently by means of flat retractors. Some

may find the Watson retractor valuable in resection. It rather tends to tear the wound larger, as the spring is powerful (Figs. 35, 36).

FIG. 35.

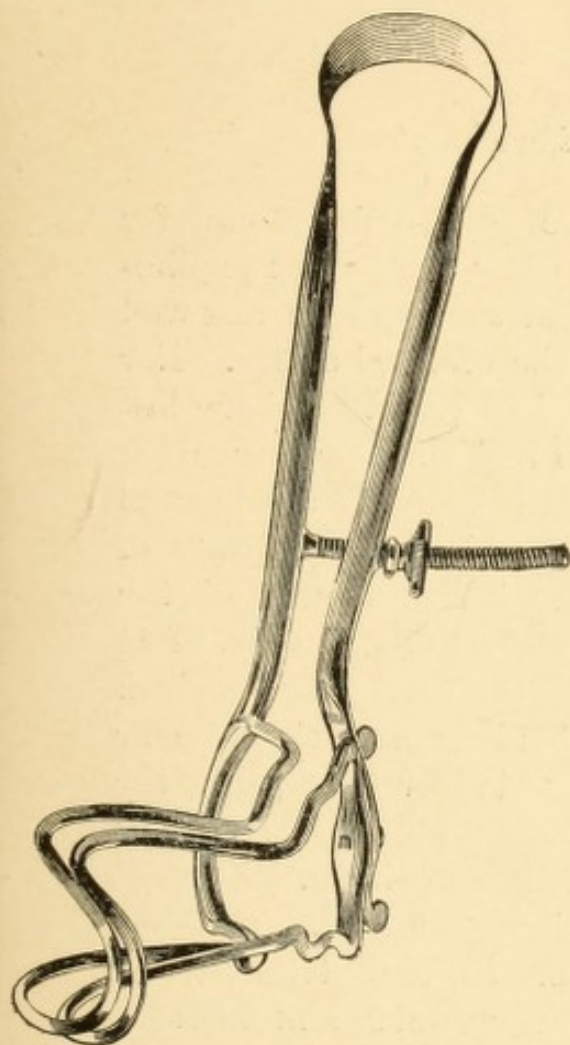
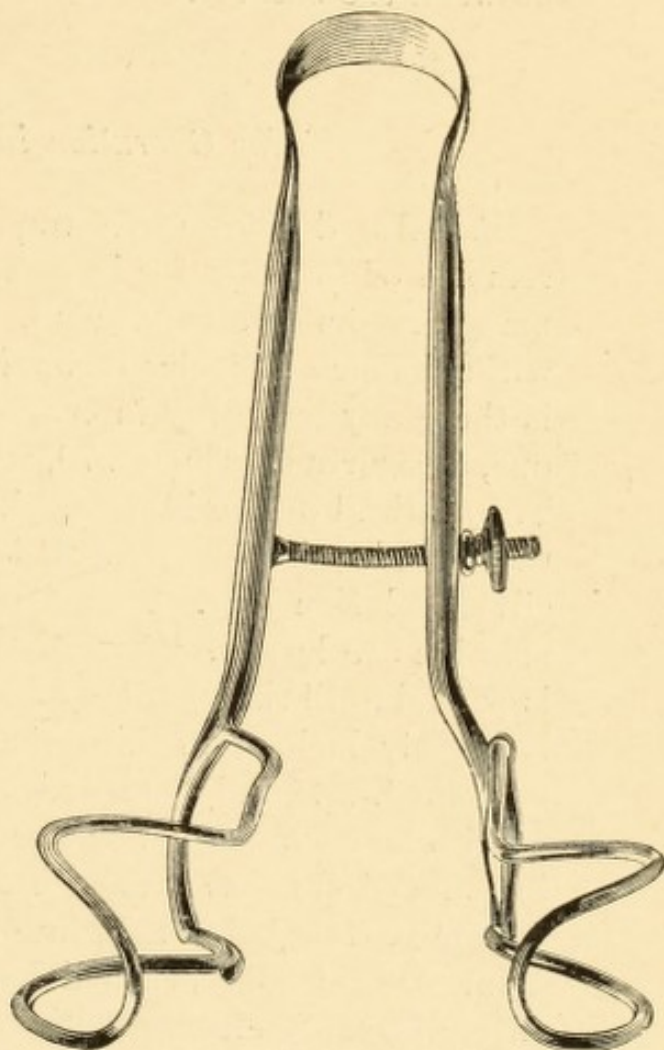


FIG. 36.



Sedgwick Watson (of Boston) retractors.

Sutures of the Bladder Wall.

As regards suturing the bladder wound :

When the opening is small I never employ sutures, but when I have had to resect growths, and the opening is large, I prefer to put in transverse sutures, which pass through the muscle layer of the bladder wall without involving the mucous membrane ; but when this is done

the bladder should always be drained by a catheter in the urethra, and a tube should be passed through the supra-pubic incision on to the face of the bladder wound, to obviate any danger which might arise from leakage between the sutures.

The Operation in the Female.

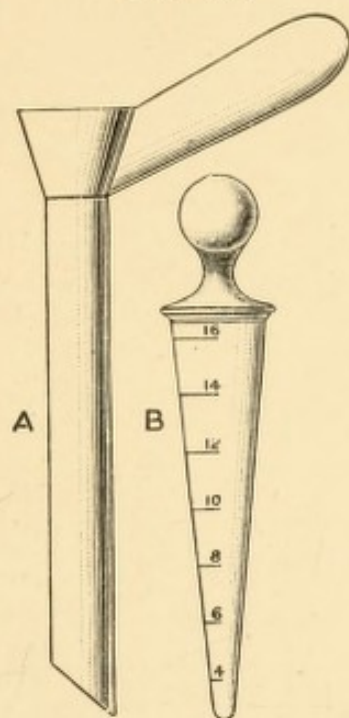
Females do not often require supra-pubic route for removal of tumours, for in many cases the benign papillomata are delicately pedicled, and they can be removed without much difficulty through the urethral orifice. Nor is there any mortality in cases taken early. I have lost one, a recurrent case, æt. 70, who had multiple carcinoma. The urethral orifice is cleansed, and the entire urethra and the bladder are then washed out with weak nitrate of silver solution (gr. 2 @ Oj), and four ounces of the solution are left in. A Kelly urethral dilator (Fig. 37 B) is passed until the channel admits the little finger—which is gently insinuated into the bladder and the tumour examined. If it is pedicled, the bladder is emptied, the pelvis elevated. The largest Kelly urethroscope tube is introduced (Fig. 37 A), and used like a caisson.

The pedicle is brought into view with a little management, caught and crushed by means of a long pair of Lister forceps, closing with a catch rack, and inserted into the bladder alongside but outside the tube; the tumour is then pulled off piecemeal, the forceps being left in the pedicle.

If the operator judges the growth to have a long enough pedicle to allow of it being brought to the orifice of the urethra, the tumour, or its pedicle, is seized through the caisson-tube, and then pulled, with the caisson-tube, out of the urethra. The tumour is then cut off, and the pedicle stump, still gripped by an artery forceps, is pushed back into the bladder, and left there an hour or so. A drain-tube, or catheter, is placed

in the bladder, which is then washed out — and the viscus drained for twenty-four hours,—after which the

FIG. 37.



Kelly urethroscope and urethral dilator.

catheter may be removed. Instead of the pedicle clamp, a silk ligature may be tied round the stump, and the ends LEFT LONG and projecting out of the urethra.

If the ends are cut short, as in tying an artery, the knot will come away covered with phosphate as a small stone, to the discomfort of the patient, and perhaps discredit to the operator.

If the growth is found *sessile* and removable, the suprapubic route must be adopted, and the tumour thoroughly removed.

Essentials in the Operation.

Whatever may be the technique adopted, there are three essentials to success.

1. No free floating pieces of growth should be left. The finger or the eye, or both, should demonstrate the bladder to be entirely free.

2. The patient should not leave the table until all hæmorrhage has ceased. Leakage of blood is very insidious, and saps the strength quickly ; whilst clot in the bladder leads to subsequent cystitis, tube blockage, and wound infection.

3. The drainage must be *free*. Let the surgeon use too big a drain rather than too small. Let his incision be too big than too little. The danger consists in extravasation of urine along the cellular planes in front of bladder. The result is suppression of urine.

After Treatment.

The patient is not dressed for twenty-four hours, at the end of which time the bed should be extremely wet. Any pain during this period is subdued by an injection of morphia. At his first dressing the safety-valve tube is removed, and any clamp that has been left in is released and gently withdrawn. I rarely wash out the bladder. At first I did so because it was a recognised method of treatment, but knowing how frequently one or other ureter is affected, I do not wash now routinely, but reserve the procedure for those cases in which there is obviously a septic residual, and in which there is a nightly rise of temperature.

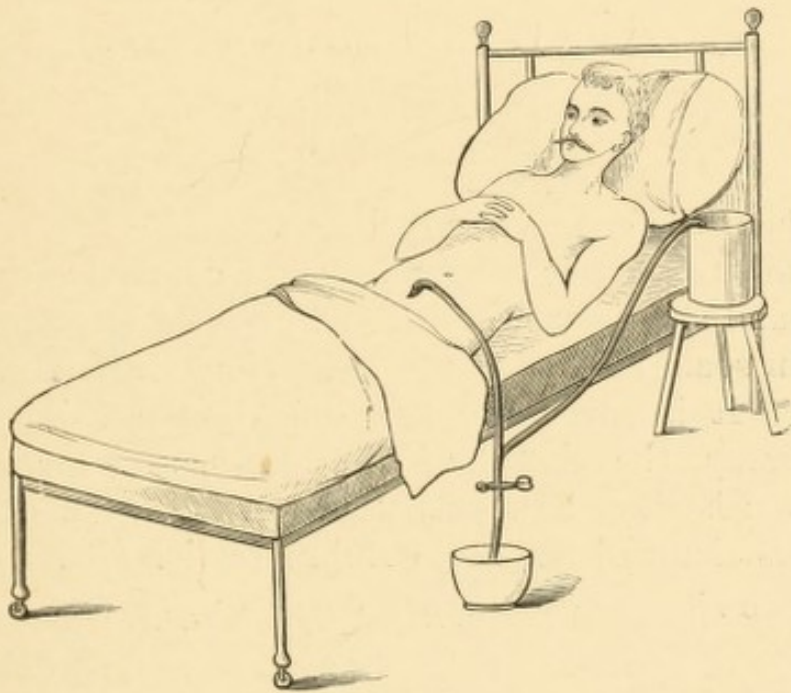
The whole surface of the abdomen is then washed, dried, and covered with a layer of zinc ointment. The patient is turned gently on to his side, his back is washed, dried, and covered with ointment, and the draw-sheet replaced by a fresh one.

An aperient is administered at the end of twenty-four hours, to prevent that distressing distension of the gut which often ensues from shock. For the first three days he is dressed once a day ; on the fourth day his second tube is removed, and he is dressed more often and moved about more freely. If the wound is a small one, as it often is, the patient passes the urine naturally about the fourteenth day. At first the urethral supply is small,

but it gradually mounts until about the twenty-first day, when he is nearly dry. Two small rises of temperature mark the period of convalescence; the first at the fourteenth day, after the first passage of water *per urethram*, and the second when he first rises from his bed. An oscillating temperature denotes septic residual or pyelitis.

There are various ways of hastening the healing of the supra-pubic wound. One is to tie in a black coudé catheter, the eye lying just within the orifice of the bladder, the outer end being passed into a bottle. This keeps the patient dry and comfortable, for it frees him from a wet sheet; but it is liable to irritate his urethra

FIG. 38.



Author, Sprengel-pump suction apparatus for bladder drainage
(now discarded).

and to set up a little urethro-cystitis, which in itself often defeats the aim and object of its use. I very rarely employ it. The other is to leave a soft rubber catheter in the bladder, passing through the supra-pubic wound, and to drain it into a bottle under the bed. This is, in my opinion, the better method, if any is adopted. Years

ago I invented a Sprengel-pump* drainage apparatus, which kept the patients comparatively dry by sucking out the urine as it entered the bladder (Fig. 38). This method has been since utilised and improved upon, both in Edinburgh and America, but I do not advise it even in its improved form, for I found it tended to draw air into the bladder and to set up a low form of cystitis.

Drug and Dressing.—My best results have been obtained by dressing the supra-pubic wound with plain aseptic gauze, wrung out of boiled water and covered with layers of absorbent lint. Alembroth gauze and cyanide gauze are both apt to give rise to a diffuse pustular eruption when soaked with urine.

The patient usually takes the following mixture—

℞ Urotropine, gr. iv--vj;
Sodæ Bicarb., gr. x;
Liq. Opii Sed., ℥iii;
Inf. Uvæ-ursi, ʒj; ter die ex aquâ.

throughout the course of his illness.

If the supra-pubic wound becomes covered with phosphates and sloughy, I take a fine piece of gauze, soak it freely in some acid pepsin solution, and stuff it into the wound. It is surprising how quickly the white slough comes away, the phosphate disappears, and the surface assumes a healthy healing aspect. After a few days the pepsin is changed for Lotio Rubra (*Edin. Pharm.*).

* 'Illustrated Medical News,' September 28th, 1888.

APPENDIX A.

THE CAISSON IN ACCURATE BLADDER SURGERY.*

A "CAISSON" in engineering work is a chamber of iron or wood which is used in the construction of subaqueous foundations, such as those required for the piers of bridges. Caissons, often in the form of enormous hollow cylinders, are sunk over the sites selected for the position of the piers until they rest on the river bed, and sink into the softish soil by their own weight or ballast pressure.

The upper end is above the river level. The water is pumped out until the cylinder is empty, and the excavation is then proceeded with as if on dry land.

This is precisely what the hollow cylinder or caisson accomplishes in bladder surgery. It is indifferent whether the cylinder be made of vulcanite, or white porcelain, glass, or metal. A Ferguson's speculum forms a good all-round caisson.

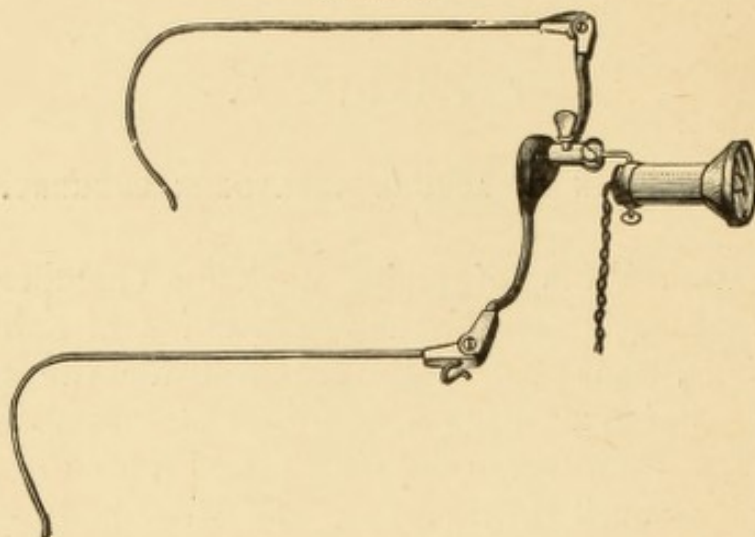
The light I employ, if I am working with a current from the main, is the Schall head-lamp (Fig. 31); with an accumulator a smaller head-lamp must be employed, such as Washington Isaacs' search-light (Fig. 39) mounted on a Downs Bros.' spectacle frame.

Beside its employment in removing benign growths which are very small, and medium-sized growths, the caisson is of the greatest value in marking out the lines for the enucleation of intra-vesical outgrowths of the senile enlarged prostate, in curetting and cauterising definite

* Introduced by author to the Medical Society of London, November 19th, 1892.

localised simple or tuberculous ulcerations, in incising the mouths of diverticula containing stone, and in sounding or operating upon the male ureter.

FIG. 39.



It is unfit for contracted bladders or very large or extensive vesical growths.

The method is recommended on the following grounds :

1. Only a small incision is necessary.
2. The continual passage of fingers, forceps, curettes, and sponges through the wound and bladder incision is unnecessary, for the caisson once introduced is not removed until the stitches have to be inserted. All bruising and tearing of the bladder incision by these manipulations are thus avoided, and if cystitis is present, all chance of fouling of the prevesical tissue is minimised.
3. The growth, the whole growth, and nothing but the growth can be removed.
4. The smallest patches of primary or secondary growth can be seen and accurately treated, the caisson being shifted from place to place.
5. The base of the growth can be cauterised by means of a galvano-cautery porcelain point with safety and certainty if a vulcanite caisson is employed.
6. Bleeding can easily be arrested before the patient leaves the table.

APPENDIX B.—135 REMOVALS OF GROWTH FROM THE BLADDER.

The first Fifty are Cases of Removal of Villous Papilloma.

I believe this list contains all the operations I have purposely performed for the relief of growth of the bladder up to the end of April, 1901. No deaths have been omitted. The scant details do not, I regret to say, convey any knowledge to the reader. They are placed in the appendix more as a grateful acknowledgment of the kindness and courtesy of the medical men who have sent the cases to me for operation.

No.	Initial.	Age.	Medical attendant.	Cystoscopic diagnosis.	Operation.	Result.
1	Mrs. B.	44	Dr. Oldfield	Small pedicled villous papilloma, left ureteric orifice	Urethral dilatation and ablation	Healed; recurred.
2	Mrs. C.	60	Dr. Field (of Bath)	Hazel-nut sized sessile fibro-papilloma, left ureteric orifice	Urethral dilatation	Good reports for five years.
3	Mrs. W.	64	Dr. Wilson (of Ayrshire)	Large sessile fibro-papilloma, right base	Urethral dilatation	Severe hæmorrhage, but recovered rapidly; recurrence.
4	K.	48	London Hospital	Very large sessile, dense fibro-papilloma, left side of base	Supra-pubic	Died on fifth day. D.
5	Mrs. W.	60	Dr. Murphy (of Twickenham)	Large walnut-sized, pedicled villous papilloma, right ureteric orifice	Urethral dilatation	Rapid recovery; lost sight of.
6	S.	32 (M.)	London Hospital case	Three large fibro-papillomata, right base, pedicled and sessile	Supra-pubic	Recurred.

No.	Initial.	Age.	Medical attendant.	Cystoscopic diagnosis.	Operation.	Result.
7	Mr. H.	25	Dr. A. E. Kennedy (of Plaistow)	Large villous papilloma, posterior wall, pedicled	Supra-pubic	Rapid recovery; remains well.
8	Dr. D.	35	Dr. Carline (of Lincoln)	Large villous tumour, left side of urethral orifice, sessile	Perinæal	On two occasions a little blood after coition.
9	Mr. J.	44	E. H. F.	Long, thin, pedicled, fig-sized villous papilloma, lying in trigone	Supra-pubic	Rapid recovery.
10	Mrs. L.	71	Dr. Aston-Ayres (of Balham)	Small area of sessile villous growth, left base	Urethral dilatation	Recurred.
11	Mr. E.	34	Drs. R. H. Nicholson & Zimmerman, R.N.	Very small pedicled papilloma, left base	Supra-pubic	Died of suppression; insufficient drainage. D.
12	Mr. A.	44	Dr. H. G. Smith (of Sittingbourne)	Small sessile villous papilloma, interureteric bar	Perinæal	Rapid recovery.
13	Mr. R.	32	Dr. Henry Kempster	Subsessile fibro-papilloma, right side of urethral orifice	Supra-pubic	Rapid recovery; recurred.
14	U.	52 (M.)	Hospital case	Small sessile villous papilloma, left ureteric orifice	Supra-pubic	Rapid healing.
15	C.	22 (M.)	Hospital case	Monkey-nut sized sessile villous papilloma at right ureteric orifice	Supra-pubic	Rapid healing.
16	W.	42 (M.)	Hospital case	Cystoscopy failed because of size of growth	Supra-pubic; large succulent villous growth pedicled on right base	Growth removed filled a 3-ounce measure; rapid recovery.
17	Mr. I.	43	Dr. Hunter (of Matlock), Dr. H. H. Taylor	Villous papilloma, right (pedicled) ureteric orifice	Supra-pubic	Rapid healing.

NO	MR. L.	40	MR. C. G. HARRISON	Cystoscopy failed	Supra-pubic; large and pedicled?	Fragments filled 6-ounce measure glass; healed well; 5 years' history.
19	Rev. Q.	42	Dr. T. W. Jackson (Chorley)	Cherry-sized sessile villous papil- loma, right ureteric orifice	Supra-pubic	Healed well.
20	Mr. K.	50	Dr. E. C. Bousfield	Cystoscopy failed. Diagnosis made because growth had been passed	Supra-pubic; large Tangerine orange sized villous growth, broadly pedicled, right ureteric orifice	Died uræmic. D.
21	L.	62	Hospital	Monkey-nut sized sessile villous, above left ureteric orifice	Supra-pubic	Slow healing.
22	Mrs. S.	46	Dr. Hunter (of Matlock)	Large villous, base of bladder, in front of right ureteric orifice	In Dilatation of urethra; large Tangerine orange sized growth removed	Reported well for 5 years.
23	Mr. L.	45	Dr. C. H. Willey (of Sheffield)	Pedicled to left ureteric area	Supra-pubic	Slow healing; left testis inflamed.
24	Mr. J.	50	Dr. Davis	Villous papilloma, flattened and pedicled to left ureteric area	Supra-pubic; tumour filled a 2-oz. measure	Did well.
25	Mr. S.	24	Dr. T. Keser	Cock's comb-like, villous, pedicled right ureteric area	Supra-pubic	Secondary hæmorrhage; did well.
26	Mr. E.	47	E. H. F.	A fleecy villous papilloma, stalked to right ureteric area	Supra-pubic	Recurred.
27	H.	49	Hospital	A long papilloma, broadly pedicled, left ureteric orifice	Supra-pubic	Did well.
28	Rev. H.	73	Dr. Walter Gripper (of Wallington)	Cystoscopy failed because of clot retention	Supra-pubic; firm, flat fibro-papilloma, left wall	Do.

No.	Initial.	Age.	Medical attendant.	Cystoscopic diagnosis.	Operation.	Result.
29	Mrs. O.	47	Dr. Pavy	A stunted villous papilloma, stalked to right ureteric area	Urethra dilated	Did well.
30	Mrs. G.	59	Dr. Ferguson (of Richmond), Dr. Bradshaw Smith (of Burbage)	Subsessile tough villous papilloma, right ureteric orifice	Urethra dilated	Do.
31	Mr. M.	44	Mr. Heycock	Villous papilloma pedicled left ureteric area	Supra-pubic; pedicle like string	Do.
32	Mr. N.	42	Mr. Heycock	Villous papilloma pedicled to right ureteric area	*Supra-pubic	Do.
33	Mrs. A.	63	Dr. Jago	A large fibro-papilloma, subsessile, right ureteric area	Urethral dilatation	Do.
34	Mr. G. P.	27	Dr. Arthur Codd (Bromley)	A walnut-sized villous papilloma pedicled posterior wall over right ureteric area	Supra-pubic	Do.
35	H. W.	24	Hospital	Monkey-nut sized villous papilloma pedicled left ureteric area	Supra-pubic	Do.
36	Mr. F.	39	Dr. Clare (of Jamaica)	Walnut-sized villous growth pedicled to left ureteric area	Supra-pubic	Do.
37	Mr. K.	55	Dr. Fraser Stokes	Fig-sized villous papilloma pedicled to left ureteric area	Supra-pubic	Do.
38	Mr. W. W.	55	Dr. Penberthy (of Cambridge)	Fleecy villous sessile growth, posterior wall, near interureteric bar	Supra-pubic; filled a 2-dr. measure	Do.
39	Mr. T. G.	42	Mr. MacCarthy	Thin pedicled villous papilloma.	Supra-pubic	Death from suppression;

40	Mr. P.	27	Dr. Prondfoot (of Oxford)	Monkey-nut sized villous papilloma pedicled to left ureteric area	Supra-pubic	Did well.
41	Mr. G.	50	Dr. George Flower (of Yeovil)	Small tufted sessile villous papil- loma, right ureteric area	Supra-pubic	Tedious convalescence.
42	Mr. F.	35	Dr. Hawkes (of Launceston)	Monkey-nut sized villous, pedicled to right ureteric area	Supra-pubic	Did well.
43	Mr. H.	53	Dr. Pearce (of Brighton)	Sessile patch at left ureteric area	Supra-pubic	Do.
44	Mr. E. J.	32	Dr. W. T. Clegg (Liverpool)	A long villous papilloma from left ureteric	Supra-pubic	Do.
45	D. K.	50	Hospital	Luxuriant bilobed villous papil- loma	Supra-pubic; filled 2-oz. measure	Do.
46	Mrs. W.	70	Dr. Hairsine (Balham)	Villous sessile tumour, left side, behind left ureteric orifice	Urethral dilatation	Recurred.
47	Miss G.	?	E. H. F.	Fig-shaped and sized villous, pedi- cled left ureteric area	Urethral dilatation	Did well.
48	Mr. W.	?	Dr. O'Connor	Three villous papillomata, right ureteric area, pedicled	Supra-pubic	Do.
49	Mr. R.	?	Dr. Kibbler	Broadly sessile villous papilloma, left base	Supra-pubic	Do.
50	Mr. G. A. H.	44	Dr. Ferguson (of Richmond)	Villous papilloma lightly pedicled to right ureteric area	Supra-pubic	Do.

The following are not classified.

No.	Initial.	Age.	Reference (operation bk.)	Medical attendant.	Cystoscopic diagnosis.	Operation and result.
51	Mrs. B.	45	Vol. ii, 121	Dr. Oldfield	Villous papilloma, pedicled right ureteric area	Urethral dilatation.
52	Mr. W.	50	Vol. i, 88	Dr. Squire (Birmingham)	Large sessile villous papilloma; site not noted. (March, 1892)	Perineal failed; consecutive supra-pubic with air distension.
53	D.	46	Vol. i, 108	Hospital case	Tam-o'-Shanter button of epithelioma behind left ureteric orifice; perineal. Found base very tough	Growth chewed off bit by bit with forceps. Operation route very unsatisfactory.
54	S.	34	Vol. i, 85	Lond. Hosp., Dr. Gilbert Smith	Two large sessile villous papillomata around urethral orifice	Supra-pubic.
55	A. D.	46	Vol. ii	Dr. Morgan (of Pontypriid)	Epithelioma, left lateral wall	Supra-pubic; Trendelenburg posture; resection (cf. Trans. Clin. Soc., 1894, p. 163).
56	L.	53	Vol. ii, 52	Dr. Kennedy (of Plaistow)	A thick-stalked, softish growth on right side, in front of ureteric orifice	Supra-pubic; caisson tube.
57	M. J. P.	60	Vol. ii, 58	Dr. Keay (of Colme)	Patient bleached; thick pedicled growth on left floor	Perineal section. Operation route unsatisfactory.
58	Mr. T.	61	Vol. ii, 62	Dr. Alexander T. Scott	Bleached; bladder full of clot; cystoscopy failed	Supra-pubic; white, flat, sponge-like growth on floor, right side; torn off with forceps. Gradually sank exhausted, 2nd week. D.
59	R.	40	Vol. ii, 67	Hospital case	Large walnut-sized growth, right side of floor; base very thick	Supra-pubic; villous carcinoma.
60	Mr. L.	66	Vol. ii, 69	Mr. Langton and Dr. Couper Cripps	A bald epitheliomatous mass, right side of base	Supra-pubic, caisson; sinus left. Patient died, probably of renal, about nine months later.
61	M. W.	40	Vol. ii, 84	F. H. V.	Flange-shaped, sessile, pedicled, villous, behind a monkey-nut sized piece right side, behind	Supra-pubic.

NO.	PATIENT.	PAGE.	VOL.	YR.	OP.	REMARKS.
63	Mr. W.	49	Vol. ii,	119	Dr. Miller	Hard epitheliomatous growth, left side of base. Supra-pubic.
64	Mr. R.	32	Vol. ii,	158	E. H. F.	Thick, sessile, succulent epithelioma, left side of trigone. Perineal section. Operation route unsatisfactory. Small papilloma, right side of trigone; a large monkey-nut sized papilloma posterior to ureteric orifice. Supra-pubic.
65	Mr. W.	49	Vol. ii,	122	—	A walnut-sized villus-covered malignant growth, left side of bladder base. Supra-pubic.
66	Mr. M.	58	Vol. ii,	168	Dr. Cock (of Peckham)	A rough villus-covered carcinoma, left of urethral orifice, trenching upon that opening; much hardness of base. Gradually sank. D.
67	Mr. P.	61	Vol. ii,	174	E. H. F.	Villus-covered carcinoma, with a thickened infiltrated base, so that it could be turned over like a parchment chancre; left side of trigone involved outer lip of left ureteric orifice. Supra-pubic.
68	Mrs. I.	'Old lady'	Vol. ii,	185	E. H. F.	Large, thick pedicled villous papilloma from right ureteric area. Urethral dilatation.
69	Mr. B.	53	Vol. ii,	247	Drs. Muggleton and Inglis (of Hastings)	A tough and sessile villus-covered carcinoma over left ureteric area. Supra-pubic; head light failed; insufficiently done; sinus remained.
70	Mrs. M. B.	55	—	—	Mr. Heycock	A pedicled fibro-papilloma with carcinomatous base (malignant papilloma). Urethral dilatation.
71	Mrs. L.	76	Vol. iii,	14	Dr. Henderson	A pedicled, monkey-nut sized papilloma, right ureteric area. Urethral dilatation.
72	Mr. T.	18	Vol. iii,	17	E. H. F.	Large villous papilloma, pedicled interureteric bar. Supra-pubic.
73	S.	34	Vol. iii,	31	Hospital	Multiple villous papillomata; one flat, sessile, fig-shaped piece to the right of urethral orifice, and one exactly opposite it to the left; also posterior wall patches. Supra-pubic.
74	Mrs. W.	68	Vol. iii,	38	E. H. F.	Five small patches of villous papilloma on posterior wall; had been bleeding profusely. Urethral dilatation.
75	Mr. U. L.	52	Vol. iii,	38	E. H. F.	Several scattered pieces of sessile villous papilloma over posterior wall. Supra-pubic.

No.	Initial.	Age.	Reference (operation bk.)	Medical attendant.	Cystoscopic diagnosis.	Operation and result.
76	Mr. R.	40	El. Ill., ii ed., p. 107	Mr. Foly Smith	Phosphatic-covered epithelium pedicled poste- rior superior wall	Supra-pubic.
77	Mrs. R.	55	Vol. iii, 44	Mr. Tyson (of Folkestone)	Anæmic and ill. A thick, fleshy, pedicled villous carcinoma, right side of trigone	Urethral dilatation.
78	W. E.	47	Vol. xvi, 108	Hospital	Large fleecy fibro-papilloma pedicled to right ureteric area	Supra-pubic.
79	Mrs. M., "extremely fat old lady"	?	Vol. iii, 144	Hospital	Extensive hard and large epithelioma, right side of bladder	Urethro-vaginal cystotomy; stitched up; did well; no in- continence.
80	Mr. J. C.	46	Vol. iii, 163	Dr. McGachen Markgate St., (Dunstable)	A man pinched and very anæmic. Masses of sponge-like, sessile villous growth around urethral orifice, and one each side of trigone; at right edge of post-trigonal depression a hard epitheliomatous mass	Supra-pubic; 2 oz. in measure.
81	Mrs. P.	56	Vol. iii, 168	Dr. Harvey Norton and Dr. Lloyd Jones	Small chestnut-sized villous papilloma, ob- liquely pedicled	Urethral dilatation.
82	Mr. H.	18	Vol. iii, 200	Dr. W. G. Little (Nelson, Lancs.)	Right ureteric prolapse, with villous papil- loma	Supra-pubic.
83	S.	?	Vol. iii, 254	London Hosp., Mr. McCarthy	Tumour very large and hard, attached to right side of base of bladder, size of small orange	Supra-pubic; hand in bladder; broad ligament cyst-crushing forceps used; growth malig- nant; reported two years later.
84	Mr. B.	32	Vol. iii, 270	Dr. Alexander Turner (Plymouth)	A firm, Tanagerine orange sized malignant papilloma, pedicled, right ureteric orifice	Supra-pubic.
85	Mr. W.	60	Vol. iii, 271	Dr. Creighton Hutchinson	Malignant papilloma	June 19th, 1896.—Operative note lost.

87	Mr. H.	59	Vol. iii, 316	Dr. Muggleton and Hobart (of Cork)	Multiple splashes of a low, flat, villous papil- loma all over floor, chiefly about right ure- teric orifice	Supra-pubic.	
88	Mr. H.	21	Vol. v, 193, 240	Dr. G. W. Little (Nelson, Lancs.)	A small orange-sized, thick, irregular, tumefy- ing malignant growth, extending over ante- rior wall, just over urethra, and spreading around orifice; it crushed like a soft turnip	Supra-pubic; gauze plug.	
89	Mr. B.	50	Vol. iii, 447	Hospital	Left ureteric prolapse with villous papilloma	Supra-pubic.	
90	Mr. M.	44	Vol. iii, 463	Dr. Alexander Mooney (of Preston)	Very large malignant villous growth, pedicled, right ureteric orifice	Supra-pubic; 3½-oz. measure filled.	
91	Rev. Mr. B.	56	Vol. iii, 476	Dr. H. Brown (of Ipswich)	Large walnut-sized villous papilloma, pedicled broadly to left side of urethral orifice; another on right of right ureteric orifice	Supra-pubic; bases succulent and epitheliomatous.	
92	Mr. F.	62	Vol. iii, 483	Dr. Knowles (of Maidstone)	Broadly sessile, very dense fibrous growth from right ureteric orifice, extending like an apron over urethral orifice	Supra-pubic; hand in bladder, crushing forceps. Figs. 4 and 5, pp. 6 and 7.	
93	Mr. V.	51	Vol. iv, 43	Dr. Davies (of Swansen)	Pedicled villus-covered carcinoma, left ure- teric area; very anæmic	Supra-pubic.	
94	P.	?	Vol. iv, 105	Hospital	A broadly pedicled villous papilloma, right side of trigone; it fell on to urethral orifice; also a thick spongy posterior wall villous growth	Supra-pubic, Nov. 10, 1897, much hæmorrhage; left in a large caisson and 3 pressure forceps; did well. Reported Feb., 1901.	
95	Mr. C. N.	50	Vol. iv, 105	Dr. Clarke	A patient operated upon four times previously at St. Bartholomew's Hospital by Sir Thomas Smith. Anæmic and in great distress from blockage by growth	Opened up a supra-pubic sinus; found large masses of villus- covered carcinoma springing from the posterior wall along trigone, and encroaching on urethral orifice; free removal; packed with gauze. Did well at first, but died of exhaustion.	D.
					A fig-sized and shaped, softish based villous papilloma, right ureteric area	Supra-pubic.	

No.	Initial.	Age.	Reference (operation bk.)	Medical attendant.	Cystoscopic diagnosis.	Operation and result.
96	Mrs. D.	?	Vol. iv, 121	Hospital,	Broadly sessile; fibro-papilloma at right ureteric orifice	Supra-pubic.
97	Mr. R.	36	Vol. iv, 133	E. H. F.	Multiple villous papilloma; in aggregate of fair size	Supra-pubic; opened peritoneum.
98	Mr. M.	46	Vol. iv, 133	E. H. F.	Sessile and pedicled, villus-covered, with carcinoma all over base and around left ureter	Supra-pubic.
99	Miss I.	32?	Vol. iv, 141	Dr. G. L. Turnbull	A small button of epithelioma at left base	Urethral dilatation; Kelly tube.
100	Miss V.	62	Vol. iv, 142	Dr. Elliott Price (of Ross)	A walnut-sized encrusted villous papilloma at right ureteric area, with a suspicious malignant base; much cystitis	Urethral dilatation.
101	Mr. W.	48	Vol. iv, 149	Dr. Hobart (of Cork)	Very large, broad-based, tough-villous growth at right ureteric orifice	Supra-pubic.
102	Mr. M. S.	42	Vol. iv, 152	Dr. Jones (of Inkberrow)	Pedicled villous papilloma at right ureteric orifice; another fleecy villous papilloma at left urethral orifice	Supra-pubic. Did not heal quickly.
103	Miss G.	53	Vol. iv, 157	Dr. Noble Edwards (of Brighton)	Small flat button of epithelioma and several others scattered over base	Urethral dilatation.
104	Mr. H.	63	Vol. iv, 159	Dr. Pearce (of Brighton)	Small villous papilloma of left ureteric area	Supra-pubic; complicated by enormous double inguinal herniæ; healed well.
105	Mr. T.	21	Vol. iv, 169	E. H. F.	A dense subsessile villous papilloma over left ureteric area	Supra-pubic.
106	Mrs. R.	65	Vol. iv, 175	Dr. Harper (of Finchley)	A soft-cored villous papilloma in posterior wall, low down	Urethral dilatation.
107	Mrs. L.	64	Vol. iv, 183	Dr. McArthur (of Luton)	Obliquely placed, guelder-rose sized villous papilloma on left ureteric area, subsessile	Urethral dilatation.
108	Mr. X.	?	Vol. iv, 194	Mr. Cashion and Dr. Graves	A large, hard-cored, degenerated villous carcinoma, weighing 12 oz. av., attached in	Supra-pubic.

				(of Forest Gate)		area			
110	Mr. W.	41	Vol. iv, 247	Dr. Arthur Edge (of Maidenhead)	A sessile bald epithelium arising from right ureteric area	Supra-pubic.			
111	Mrs. X.	71	Vol. iv, 280	Dr. Seymour	A large benign papilloma springing from left ureteric area	Urethral dilatation.			
112	Mr. H.	50	Vol. iv, 372	E. H. F.	A firm, small fibro-papilloma over right ureteric area	Supra-pubic.			
113	Mr. O.	64	Vol. iv, 372	Dr. Bourne (of Oxted)	A pedicled fibro-papilloma on posterior upper wall, and splashed about right ureteric orifice	Supra-pubic.			
114	Mr. L.	71	Vol. iv, 387	Dr. Nicholson (of Gainsboro')	A large fleecy villous papilloma at right ureteric area; several isolated secondary splashes around	Supra-pubic.			
115	X Y Z	48	Vol. iv, 404	London Hosp.	(A case previously operated upon at another hospital.) A dense projecting epithelioma behind trigone and along its right limb, blocking urethral orifice	Ablation supra-pubically. Died 6 months later.			
116	Mr. J. M.	60	Vol. iv, 414	Dr. Symes (Christchurch, N.Z.); seen with Dr. Mitchell Bruce in consultation	A flat patch of very vascular epithelioma behind trigone	Supra-pubic.			
117	Mr. T. R.	46	Vol. iv, 421	Dr. F. H. Atkinson (Grimsby)	A beautiful long-leaved papilloma pedicled, on right ureteric orifice, and a dense patch of bald whitish growth on left post-trigonal area; two small splashes; left ureter very much dilated and depressed; cause for this uncertain. Growth reported, benign villous papilloma	Supra-pubic. Wrenched his left leg four months later, and a mass of cancer developed in left groin. No connection between the bladder growth and the groin ascertainable (cf. Sir H. Thompson's Case 21, p. 102, "Tumours of the Bladder").			
118	Miss V.	55	Vol. iv, 410	Dr. Elliott Price (of Ross)	A pedicled, benign-looking fibro-papilloma near right ureteric orifice	Urethral dilatation.			

No.	Initial.	Age.	Reference (operation bk.)	Medical attendant.	Cystoscopic diagnosis.	Operation and result.
119	Mrs. C.	60	Vol. iv, 467	Dr. Mayor (of Little Bedwyn)	Dense epithelioma, postero-superior wall	Resected supra-pubically along with peritoneum.
120	Mr. J.	74	Vol. iv, 507	E. H. F.	A large cauliflower growth, left postero-lateral wall	Supra-pubic; tumour filled a 3-oz. measure. Left London apparently well, but I heard subsequently he had symptoms of pyelitis and died. D.
121	Mrs. W.	77	Vol. iv, 518	Dr. Wollaston Froome (of Surbiton)	A big, heavy villous carcinoma, very tough, left side of bladder	Urethral dilatation. ? Died of exhaustion (renal vomiting).
122	Mr. J. D.	60	Vol. v, 17	Dr. W. A. Greene (Cheshunt)	A small soft tumour the left side of bladder	Supra-pubic.
123	Mr. W. H. J.	57	Vol. v, 68	E. H. F.	A firm, flattened epitheliomatous growth from right side of trigone lay over, blocking the urethral orifice	Supra-pubic. Recurred in scar.
124	Mr. T.	40	Vol. v, 73	Dr. White (of Margate)	Subsessile, walnut-sized fibro-papilloma behind right ureteric orifice	Supra-pubic.
125	X.	? 58	Vol. v, 211	Seen with Dr. Blue (Louisville, Ky.)	A succulent villus-covered epithelioma, right ureteric area	Supra-pubic.
126	Mr. A.	? 50	Vol. v, 118	Dr. Robert Clitherow	Patient blanched; a small villous papilloma tuft at left base	Supra-pubic.
127	Y.	? 48	Vol. v, 123	Dr. Elam	A phosphatic, encrusted, hard epithelioma, right lower posterior wall	Supra-pubic. Abscess followed to the left of pubes. Recovery slow.
128	Mrs. M.	63	Vol. v, 162	Dr. Bowker (of Bath)	A large, broad-based, soft growth, post-trigonal space, middle line	Urethral dilatation.
129	Mrs. B.	56	Vol. v, 301	Dr. Oldfield	Pedicle, rose-red, vascular papilloma, left	Urethral dilatation.

Case.	Page.	Vol.	Dr. Slaughter	Dr. Slaughter	Dr. Slaughter	Dr. Slaughter
131	Mr. C.	62	Vol. v, 319	Dr. MacLachlan (of Oxford)	A primary hard epitheliomatous growth, right postero-lateral surface of bladder; four pea-sized villous splashes of secondary epithelioma	Healed slowly.
132	E.	50	Vol. v, 323	Hospital	Large, soft, villous papilloma pedicled to right side of base; very vascular	Healed unusually rapidly.
133	Mr. H.	52	Vol. v, 329	Dr. C. J. Thompson, Newport, I. of W.	Villous papilloma pedicled to left ureteric area	Supra-pubic.
134	Mr. C.	42	Vol. v, 332	Dr. Marshall	A large Tangerine orange sized villous papilloma, pedicled right ureteric area	Supra-pubic.
135	Mr. W.	61	Vol. v, 374	Dr. Daly (of Eastbourne)	Profound anæmia; a soft, flat half-crown piece sized epithelioma behind trigone	Supra-pubic; resected.

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