TWELVE CASES
OF
TUMOUR OF THE BLADDER
(10 IN THE MALE AND 2 IN THE FEMALE),
IN ALL OF WHICH AN
OPERATION HAS BEEN PERFORMED FOR THE
REMOVAL OF THE GROWTH,
WITH THEIR HISTORIES AND THE RESULTS.

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I DESIRE to present to the Society a brief account of seven cases of tumour of the bladder which I have operated on since the reading of my previous paper in January last (1883), when the histories of four other cases were read. Further, it may be remembered that in the preceding year I showed a patient from whom I removed a vesical tumour now more than two years and a half ago. A group of twelve cases is thus formed, and they furnish data which may be useful in guiding us, to some extent, in observing and treating similar cases in future.

A brief *resumé* of the preceding five cases may be given as follows :

CASE 1.—T. R—, æt. 29. A single pedunculated papillomatous growth, removed by perineal incision in November, 1880. He made a rapid recovery, and is now in perfect health.

CASE 2.—Mrs. F—, æt. 30. A rather large papillomatous tumour removed in May, 1882. She is now in perfect health. A carefully-made histological report by Mr. Stanley Boyd is annexed.

CASE 3.—B. G—, æt. 46. Had a large tumour filling the bladder. I removed the greater portion, and he died a day or two after. The bleeding was very severe. The growth was examined by Mr. Boyd, and his report thereon is now appended.

CASE 4.—Dr. M—, æt. 52. I removed a considerable papilloma in November, 1882. The patient was present at the meeting of our Society when the last paper was read ; his own being one of the cases. He has recently had slight return of the bleeding after a long walk of several miles, but is otherwise well. A report by Dr. Gibbes is appended.

CASE 5.—K. G—, æt. 67. In January, 1883, I removed a firm sessile growth from near the base of the bladder ; and it is now at the museum of University College. It has been examined by Mr. Shattock, who has favoured me with the report which is appended.

The following cases, now reported for the first time, form the second series :

CASE 6.—T. F—, æt. 67. January 17th, 1883. About three years ago he first saw blood in the urine ; no return of blood until four months ago, since which it has been constant and gradually increasing. He has several times observed the stream to begin clear, and become red as it passed ; and it is mostly more bloody at the close. This I have myself witnessed. He passes urine three or four times in the night, holds it three or four hours in the

day; has some smarting in the penis, and has pains in the back when taking exercise and at other times. Shreds passed in the urine contain abundance of long spindle-shaped cells, running into fibres.

Operation on January 30th.—After the usual incision a growth was at once recognised; large, broad, and occupying the left side of patient's bladder, near to the neck, extending far back. With time and patience I extracted a large quantity of rounded masses of growth, rather firm in texture, and tied in a tube as usual. Pain and bleeding not considerable.

February 3rd.—Very slight bleeding; urine improved; patient doing well.

5th.—Bleeding completely ceased.

6th.—Removed the tube.

15th.—Retains urine three hours; no pain.

21st.—Wound healed; went home, feeling very well.

March 13th.—Slight frequency of micturition, very slight pain; a trace of blood seen now and then in urine.

April 9th.—A short attack of bleeding four days ago. To inject solution of perchloride of iron.

The tumour was examined by Dr. Heneage Gibbes, whose report is appended. It is epithelioma, associated with some villous growth.

CASE 7.—W—, W. æt. 63. January 24th, 1883. Seven years ago he first suffered from bleeding, and retention caused by clots; a condition which has been repeated at long intervals ever since.

Last year numerous bleedings. Last month much blood lost; bleeding less when no exercise; not much pain. Rises two or three times at night; retains urine two hours in the day. Often sees urine clear at commencing and very red at close of the stream. He passed an excellent specimen of villous tumour at the first visit.

February 8th, 1883.—I operated, readily finding a tumour, rather sessile, with a wide base, at back of bladder towards right and on the floor adjacent. All the

salient portions removed, leaving rough or slightly ragged base. A tube tied in.

13th.—Feverish; took out tube.

20th.—All urine passes by wound, still bloody.

March 2nd.—Sitting up and moving about. Very slight blood, this lessened by injection of perchloride of iron into the bladder.

12th.—No blood seen for a week; holds urine three hours. Walked out for an hour yesterday.

April 3.—Has been three weeks at home; a slight frequency of micturition, pain trifling, no blood, and feels better than he has done for a long time; has gained flesh and strength.

June 6th.—Living and well.

The tumour was examined and regarded as villous papilloma, and by Dr. Heneage Gibbes whose report is appended.

CASE 8.—J. M—, æt. 64. February 10th, 1883. First saw blood in the urine about a year ago; last six months this symptom has much increased, and pain and frequency have appeared also; the last three months the blood has been continuous and excessive in quantity, so that he has been confined to his room during that period. For several days examined the urine-deposit microscopically, and found no villi, but only large, oval, granular cells. But his condition called for further research, and I determined to explore the bladder.

February 21st.—Subject very stout, and perineum deep; on entering the bladder my finger encountered on patient's left a wide-based sessile growth, very hard and firm, mammillated, with two heads projecting above the rest. I removed the greater portion with some difficulty, leaving a thickened base, and tied in the tube as usual.

24th.—Took out tube; blood still free.

March 3rd.—Urine slightly bloody; about half passes by wound. No pain; takes food well.

6th.—Blood ceased to day.

16th.—The wound has healed ; urine free from blood ; takes food well ; holds water two hours.

April 18th.—No blood since ; slight cystitis ; complains chiefly of pain and swelling under left thigh. There is a tumour there, suggesting suspicion of secondary growth. Health fair.

May 5th.—The patient has been suffering severely with pain and increasing swelling of the tumour of the thigh, and now difficulty in micturition has appeared, due to the impaction of a phosphatic concretion in the urethra, and this was speedily relieved. It has been occasioned doubtless by an increased irritability of the bladder which has arisen of late ; still no blood has been seen in the urine.

CASE 9.—Mrs. —, æt. 65. February 22nd, 1883. She first noticed blood in the urine about seven or eight years ago ; has had much pain in the left side and back. Many severe attacks at different times since, with intermissions of bleeding for two months.

November, 1882.—A severe attack, which has never ceased since, in spite of much styptic treatment ; very slight pain in left side and none in the bladder ; micturition frequent, not painful, the urine is offensive, bloody, mucopurulent ; sounded but nothing felt. Examination of the urine shows abundance of spindle-shaped cells and fibres.

February 23rd, 1883.—Dilated the urethra and found tumour occupying base and right side ; much time spent in carefully nipping off a large quantity in small masses ; bleeding very free.

28th.—Much pain in the night, very little bleeding ; no urine passed, only three ounces removed by catheter. Pulse 100, temp. 99°. Some vomiting.

March 1st.—No urine has been passed ; abdomen tender ; takes some food. She died in the night with complete suppression of urine.

2nd.—*Autopsy*.—No trace of peritonitis, both kidneys

much diseased ; the left contains a considerable calculus, with marks of long-standing inflammation and suppuration around it.

Mr. Eve of the College of Surgeons examined the growth and reported it to be "a villous papilloma."

CASE 10.—J. S—, æt. 53. First seen on August 24th, 1881. For six months past has been subject to frequent micturition with pain before and after the act, not worse for movement, occasionally a slight bleeding seen. Urine examined by microscope, nothing but blood, no *débris* of growth.

May 8th, 1882.—Came up again. Sounded the bladder and found nothing but a soft velvety surface, as if coats thicker than natural (the only physical sign sometimes presented by tumour) ; prostate rather full from rectum. Pain and frequency the same, worse at night ; not aggravated by activity. Repeated careful examination by microscope discovers no tissue *débris*.

August.—Symptoms nearly the same, rather more pain, but florid blood seen at the end of micturition.

November.—Symptoms much aggravated, nothing characteristic found in urine. Heard in December that he is decidedly worse.

March 2nd, 1883.—Last two months has bled every day, and passes urine every hour with much pain in the penis, none in the legs or back. Appetite fair ; walks one or two miles daily ; has lately become thinner.

3rd.—Operation found large mass half filling the bladder and harder than any I had felt before. It sprang from the opposite base and a little from the patient's right side. I removed the growth with a cutting forceps only, owing to the density of the structure, bit by bit ; bleeding very free ; a tube was put in ; pain was inconsiderable.

4th.—Supra-pubic pain and sickness ; urine passes freely by tube and is bloody.

5th.—Less blood ; very weak, pulse 130. Abdominal pain ; takes milk, champagne, &c.

6th.—Very slight difference to report.

7th.—Much weaker, restless. Died at noon.

Autopsy.—A portion of tumour on right side, very firm, was still remaining; the adjacent parts of the bladder seem to be infiltrated with tissues like the growth itself. Both kidneys small and pale, the right showing signs of pyelitis. Lumbar glands are slightly enlarged. It is worthy of remark that no *débris* was ever found indicating the presence of this growth, although repeated examinations of the urine deposits were made.

Mr. F. S. Eve examined this specimen and reported as follows:—"The tumour consists of alveoli, enclosed by their connective tissue bands, and containing elongated and columnar cells, and being therefore an example of a cancerous growth."

CASE 11.—W. D—, æt. 65. February 8th, 1883. Nearly one year ago the patient first saw blood in the urine; it has been more or less constant ever since. Urine of a brownish tint, with shreds; these under the microscope show abundant fusiform cells and fibres.

March 30th.—Operation: on introducing my finger I encountered behind the neck of the bladder, on the floor and spreading to the patient's right, several eminences formed by a growth, firm, sessile, without pedicles. Some of these I snipped off with cutting forceps, leaving the chief part, a hard mass, occupying the base, and apparently involving the walls of the bladder, as far as I could estimate with one finger in the bladder and the other in the rectum. Put in the tube as usual.

April 2nd.—Bleeding ceased, took out the tube.

5th.—Patient is feverish and weak. He continued thus, never losing blood, but gradually becoming weaker, and dying on the 12th inst., thirteen days after the operation.

This is the first tumour which, on account of its form, I desisted from endeavouring to remove. It was examined by Dr. H. Gibbes, who reported as follows:

“ The tumour arises from a solid base and is only in a small part villous growth. The base contains non-stripped muscle, and is probably a direct outgrowth from the walls of the bladder, which it exactly resembles. Proceeding towards the surface in the submucous tissue, a number of inflammatory foci occur as round masses of small cells, while directly under the epithelium the whole of the submucous tissue is infiltrated with inflammatory cells and a number of capillaries run directly towards the surface. The epithelium on the surface is similar to that of the normal bladder, this description applies to the main body of the tumour. There are, however, several small outgrowths from this, which resemble the villous growths examined before ; they have the connective-tissue trabeculæ, with stratified columnar epithelium arranged on them, in some bases there are crypts lined with epithelium. With regard to the question of malignancy, this tumour has only the elements of the normal bladder, which are arranged much in the same manner as usual. There are, however, some small patches of large cells that look very suspicious, but there is nothing to enable me to speak positively as to its malignant character.”

CASE 12.—C. C. S—, æt. 56. January 11th, 1883. About one year and a half ago he had for the first time severe pain in the neck of the bladder and urethra after passing water. Three months ago first saw blood in the urine after a walk.

Present state.—Great irritability and pain, and frequently observes blood at the end of passing water. Sounded : nothing detected, the bladder empties itself by its own efforts ; nothing felt by rectal examination. The urine shows no sign of tumour *débris*. He returned to the country to carry on certain plans of treatment there. I heard that he occasionally passed phosphates, and that the symptoms increased in severity.

April 3rd.—Came up again. Sounded under ether : no enlargement of the prostate, the “ soft velvety ” feeling

of the bladder was notable. To try injections of iron for the bladder, &c.

During the month of April much bleeding and pain; small concretions of phosphate passed. I decided to open the urethra for the purpose of resting the bladder and allowing the urine to drain off for a time.

May 4th.—On introducing the finger felt a large sessile mass, formed by a non-pedunculated tumour occupying (patient's) right side and base of bladder, but evidently one which there was no possibility of removing; incorporation of tumour with walls of the bladder appearing to be complete. I nipped off two more salient portions than the rest, and sent them to Dr. H. Gibbes for examination.

5th.—Urine passing well and almost without blood stain through the tube. Patient more comfortable than before the operation.

Dr. Gibbes' report on this case is appended; he regards it as resembling a "hypertrophy of the submucous coat of the bladder; no villous growth is present."

Remarks.—The operation has in all cases been performed as described elsewhere,¹ and consists in opening the membranous urethra from a small median incision in the perineum, and in dilating the prostate gently and gradually with the left index finger, which when fully introduced explores the entire internal surface of the bladder, while supra-pubic pressure is made under complete anæsthesia. The way is thus made for the introduction of the forceps. Of these I have designed and employed two or three forms, and found them useful to meet varied forms of growth; and some of these are now provided with cutting edges. I may remark that while in some cases the prostate is dilatable, and admits the finger without receiving much if any injury, in others a certain degree of rupture is inevitable. This I have recognised during life, and have witnessed in two of the

¹ 'Proceedings,' New Series, vol. i, p. 51.

fatal cases ; but the division of tissue thus produced is not considerable.

In estimating the results of the proceeding—which it may be stated has, in every case but the first, consisted of simple external urethrotomy of the membranous portion—it is necessary to recall the fact that unless removed by surgical operation, vesical tumour is *inevitably fatal*. *Every recovery is a clear gain ; and a fatal issue is simply the natural termination forestalled*. In these twelve cases there have been five recoveries ; and in some of these there is every reason to believe that the cure is permanent, since there is no sign of recurring symptoms. In three cases death succeeded the operation in a few days. In one it occurred in a few weeks. In the remainder, the pre-existing severe and continuous hæmorrhage has been completely checked for a period of some months, and occasional slight bleedings have reappeared. The future course of these cases will be closely watched and duly reported.

Such a result I would submit is one which warrants a cautious observation of the numerous cases of hæmaturia which are to be found, and also the employment of digital exploration of the bladder, when the facts ascertained indicate that the cause of bleeding is not due to ordinary, obvious, and well-known conditions.

When an adult, either male or female, has long been the subject of unduly frequent micturition, the act mostly painful, with occasional hæmaturia, this sign increasing gradually in importance as the case advances, and furnishing evidence meantime that its source is vesical and not renal, a physical, *i.e.* surgical examination of the organs is of course indicated. The result of this may show that no calculus is present, and that no obvious enlargement of the prostate or of the adjacent structures can be affirmed. Nothing in the history can be distinctly referred to as a cause ; no clue in fact is offered, except such as may be found by repeated examination of the urine. And it is by this particular means that the most

trustworthy information is to be obtained. But before describing the evidence furnished by the urine, I will refer to the facts which may be obtained by the study of these twelve cases. I have therefore arranged the chief points worthy to be noted in a table, so that they may be seen at a glance.

The facts referred to are as follows :

1. *Nature of the growths.*—Eight were examples of simple papilloma ; more or less associated with dendritic prolongations of the villi natural to the vesical mucous membrane. When the growth consists entirely of these elongated villi, the term “villous tumour” suffices to describe them. Three consisted of growths, more or less malignant ; *e.g.* epithelioma and formation of cell-growths allied to sarcoma. These also are associated with villous development like that noted in the preceding class ; and in two instances, there was deposit in the neighbouring glands. One was a product closely resembling the sub-mucous tissues of the bladder without villous growth.

2. *In relation to duration of symptoms.*—It is evident that the course of papilloma is slow. The symptoms are recorded as occupying periods before operation, varying from three to seven years. I have known longer terms still in cases formerly observed, and left in the natural course of events to end in death, as they invariably do, if not relieved by surgical aid. But the progress of malignant growth is more rapid in the bladder, as it is elsewhere ; epithelioma as usual being the slowest of production in the class ; from one year to two years and a quarter are the terms presented by the examples in our table.

3. *In relation to diagnosis.*—A notable fact in the history of papilloma and of villous growths is, that the appearance of blood in the urine is one of the earliest, if not the earliest, signs of derangement in the urinary function observed by the patient. On the other hand, in the malignant growths met with, painful and frequent micturition have long preceded the appearance of blood

Table of Twelve Cases of Operation for Vesical Tumour, by Sir Henry Thompson.

No.	Case.	Age.	Duration of symptoms.	Earliest sign observed.	Result of urine examination.	Complication with calculus.	Nature of tumour.	Result of operation.
1	T. R.	29	3½ years	Blood in the urine	Not examined, no growth being expected, the operation was made for a supposed encysted calculus	A small oxalate of lime and phosph. calculus crushed	Papilloma	Living and well.
2	Mrs. F.	30	6 "	"	Ditto	—	Papilloma villous (Mr. S. Boyd)	Living and well.
3	B. G.	46	1 year	Frequent micturition; blood much later	Much large cell-growth, various forms	—	Fibro-sarcoma (?) (Mr. S. Boyd)	Died few days after operation: no autopsy: probably some giving way of bladder at base of tumour.
4	Dr. M.	52	5 years	Blood in the urine	Shreds formed of fusiform cells	—	Villous papilloma (Dr. H. Gibbes)	Well nearly six months, recently a second operation, since which no bleeding.
5	E. K. G.	67	6 "	"	Ditto	A small uric acid calculus crushed	Papilloma; resembling structure of "soft warts" (Mr. Shattock)	Returned to the Cape: probable reappearance of the tumour.
6	T. F.	67	3 "	"	Numerous fusiform cells and fibres	—	Villous epithelioma (Dr. H. Gibbes)	Recent signs of reappearance of tumour.

7	W. W.	63	7	"	"	Well-marked villous growth	—	Villous papilloma (do.)	Living and well.
8	J. M.	64	1	year	"	Never found any characteristic debris in urine	—	Composed of normal bladder tissue with villous structure added; no structure resembling malignant growth was found	Died two months after with secondary malignant growth in thigh.
9	Mrs. O'R.	65	7	years	"	Large spindle-shaped cells	Calculus in left kidney, large; both kidneys diseased; pyelitis	Villous papilloma (Mr. Eve)	Died three days after with suppression of urine.
10	J. S.	53	2½	"	Frequent and painful micturition. Blood at later stage	No characteristic debris found	—	Villous cancer (do.)	Died few days after operation.
11	W. D.	65	1	year	Blood later	Numerous long cells and fibres	—	Tissues like those of the walls of the bladder, and some villous growth in small quantity on surface (Dr. H. Gibbes)	Died fourteen days after operation, of exhaustion.
12	C. C. S.	56	2	years	Pain first; blood later	Nothing found	—	Tumour not removable; a portion taken away is regarded as resembling a "hypertrophy of the sub-mucous coat of the bladder; no villous growth is present" (Dr. H. Gibbes)	Living: symptoms relieved at present; probably from drainage of bladder.

Total result, seven recoveries, more or less complete, and five deaths.

in the urine. The same is of course true in cases of calculus and of prostatic disease.

In all vesical tumours the patient observes, as the disease progresses, that the stream of urine contains a larger admixture of blood at the close of the act than at the beginning. It often happens that the stream may commence with pure unstained urine, and become florid towards the close; and this bright red is the usual tint, and not the brown shade common in other conditions.

The microscopic examination of urine is of great importance in relation to diagnosis. In cases of villus and papilloma, and indeed of all tumours, the microscope is of great value. After my recent experiences, I attach much greater importance to it than I formerly did. At the same time it is not difficult to be deceived by some of the products found in the urine of patients where no serious organic changes have occurred.

First let me say that the deposit from a patient's urine should be examined in a fresh state; search being especially made for shreds which are mostly passed at the end of the stream, or which may be sometimes washed out by a plain water injection through the catheter. It may be necessary to repeat this examination several times. In Case 7, I found in the urine passed at the patient's first visit to me, one of the most perfect specimens of villous growth I ever saw. A slender, club-shaped process with a complete covering of columnar epithelium, and in the centre of the stem its blood-vessels full of red corpuscles clearly seen. After this, on four consecutive days, as many examinations were repeated but absolutely without result. The first observation, however, sufficed to assure me of the presence of tumour, and I had no hesitation in operating without further evidence, and removed a considerable villous papilloma.

The appearance of long villous processes in the urine-*débris*, I take to be decisive. They are in my experience never seen as normal products, or in the absence of such diseased growths in the bladder.

Another suspicious product is the appearance of a mass of adhering fusiform or spindle-shaped cells of large size ; some of them lengthened out into fibres, and when seen more or less regularly in the urine of a patient, with other symptoms, should arouse grave suspicions ; but these cells are not pathognomonic like the villous. Large round cells of various kinds, often young epithelium, are of course not sufficiently characteristic by themselves. Then I have met with large, soft-looking fibres with nuclei on them, as if recently developed from cells, and believed them to be significant of growth of some kind (associated with tumour symptoms and history), have explored the bladder and found nothing ! This I did in two cases, and it is worthy of remark that in both instances the patient was much benefited by the operation.

4. *The co-existence of calculus with tumour is to be noted.*—In two cases at least, there had been previous formation, in the one of an oxalate of lime calculus, and in the other of several small uric acid calculi, producing continued irritation of the bladder for some time. In both instances lithotripsy had been performed recently. In a third case, that of a woman, a large calculus was found in the kidney, the symptoms of which had no doubt masked the existence of the vesical tumour ; and had, before I saw her, been regarded as the cause of the hæmaturia. These facts at all events lend some support to the theory that papilloma may sometimes arise from local sources of irritation affecting a mucous membrane.

There is one important point still to be referred to, viz. what is the proportion of instances regarding tumours of the bladder generally, in which we may expect to find the physical condition of the growth such as will admit of complete removal, or almost complete removal ? I permit myself to say “almost complete” removal, because I am satisfied that with non-malignant products, like papilloma for example, a complete ablation of the growth is not absolutely essential to success. I am quite certain that I have removed the greater part, but not the whole of the

tumour in two cases at least, in which there has been no sign of reappearance for upwards of a year. I feel little doubt that when the chief mass of a papillomatous growth has been nipped off by means of forceps in or near to the base, it is impossible to affirm that all the irregular formation has been taken away ; on the contrary it is reasonable to suppose that some portion must always have been left. I believe that cicatrization takes place, and that by degrees this process leads to solidification of the tissues at the point at which evulsion was made.

I have had in one case the unusual advantage of being able to place my finger on the very site of an evulsion performed nine months before, and I then found no reappearance of growth so far as my sense of touch enabled me to judge. In the case of malignant tumours of course no attempt would be made to remove such growths ; for in no case would there be the smallest hope of being able to remove the diseased formation entire. Nor, again, were it conceivable that we could accomplish this, is there any reason to believe that advantage would accrue to the patient thereby.

I have recently made a careful examination of most of the specimens of tumour of the bladder preserved in the museums of London, and I have found about a hundred preparations, relative to which I could determine several important questions. Of these I regard about forty as malignant, and about sixty as examples of non-malignant growth ; that is, specimens of what may be considered papilloma and innocent forms of villus. Of these sixty preparations, not less than thirty-five appear to me to be removable by operation. It should be remarked that many examples are labelled "cancer" which cannot be so regarded ; a large portion undoubtedly are so ; several are probably epithelioma ; but the allegation of malignancy must not be accepted in a great number in which it is made. It is, then, an instructive and striking fact that at least one half of the simple growths can be removed with a good prospect of success. I believe the

proportion is greater than this, but I have been desirous to understate it rather than the contrary.

I shall now only add that I have performed the operation described for the purpose of ascertaining the cause of severe and long-standing symptoms when obscure, in 27 cases altogether; 21 of them occurring within the last twelve months. Among them I found 12 cases of vesical tumour, and removed it wholly or partially in 10. In 2 only I declined the attempt. I cannot therefore doubt that the prevalence of these affections is greater than it has been customary to believe it to be; and that the victims of it hitherto have, after much unavailing treatment, both surgical and medical, slowly bled to death, under the impression that the source of the hæmorrhage was renal, or at all events beyond the reach of any aid from art.

APPENDIX.

CASE 1 (report of Mr. Stanley Boyd).—The growth consisted of three chief masses of roughly spherical form, one half to three quarters of an inch in diameter, and having short narrow pedicles, and of two or three small sessile masses of similar shape. Bits of surrounding, apparently normal mucous membrane had also been removed. All the nodules were velvety on account of the projection everywhere from their surfaces, of thin folds, and embranched, somewhat club-shaped processes, one sixteenth of an inch or less in length. Under the microscope these processes consisted almost entirely of one or two very thin-walled vascular loops of wide calibre, but some showed a good deal of round-celled infiltration. They were covered by a thick layer of epithelium, the component cells of which were columnar, very long and narrow; the epithelium stripped off with the greatest ease. The mass of the tumour consisted of rather loose connective tissue, containing here and there small collections of round cells. No glandular structure was seen.

Vessels were large, numerous, and provided with stout coats in the body of the growth, but towards the surface large numbers of the same wide, thin-walled vessels were seen as were noticed in the processes on the surface. They had no muscular fibres in their walls. The surface of the growth between the processes is covered by epithelium similar to that on the villi. At the base of the nodule examined some bundles of the involuntary muscular layer of the bladder were seen, but no such tissue existed in the growth.

CASE 3 (report of Mr. Stanley Boyd).—The tumour consists of several rounded or oval, more or less pedunculated masses, varying in size from that of a chestnut downwards. Apparently they were connected with the submucous tissue, but it is impossible to be certain that they did not extend more deeply. On the surface the growths are velvety, frequently encrusted with phosphates; no processes were seen until a section was mounted, then several very short ones were found breaking the uniformity of the surface.

Microscopically there is a stroma of connective tissue with bands of a denser nature running in different directions. Cells are everywhere numerous, and in some parts the infiltration is so dense that one would have been anxious—had the patient lived—lest recurrence should increase the grounds for fearing that the tumour was a fibro-sarcoma. As, however, epithelium is present in many places, and considerable areas of loose connective tissue (like that of a nasal polypus) are seen, whilst the vessels have everywhere distinct, *i.e.* not formed by the cells of the growth, though thin walls, it seems most probable that the tumour was a loose fibroma.

CASE 4 (report by Dr. H. Gibbes).—This tumour consists of a villous outgrowth, made up of processes which branch and finally end in long filiform villi; each villus is composed of a central portion, consisting of white fibrous tissue and connective-tissue corpuscles, with a large amount of non-striped muscle. This muscle is continued

for some distance in distinct bands, but does not extend into the filiform processes, which latter are composed of fibrous tissue and small round cells. In each villus runs a blood vessel, which branches and is continued into the filiform processes up to the epithelium. All parts of the growth are covered with a stratified layer of columnar epithelium, in which many of the cells are distended with mucus. In some parts of the villi there are crypts, lined with stratified columnar epithelium, and in places these may be seen filled with loose cells and amorphous urinary products, and the cells are undergoing fatty degeneration. The whole growth is of a firm consistence and not very vascular. The cells on the surface are large, and contain a large nucleus which shows the intra nuclear network very plainly. The cells are set in a distinct basement membrane.

CASE 5 (Report by Mr. Shattock).—The portions of growth are thinly encrusted with white phosphatic material, and on section are much blood-stained from hæmorrhage into their substance. On teasing these out a low simple papillary construction of surface, with a corresponding vertical arrangement of engorged vessels is recognisable.

Microscopic sections appear much infiltrated with blood. Large portions of the section are constructed of a highly-irregular meshwork of homogeneous (fibrinous) substance enclosing pigment granules, which also extend amongst the proper elements of the tumour; the latter consist of somewhat large nucleated spherical cells. The tumour may be named a "sarcomatous papilloma," and be classed in the same category as the "soft warts."

CASE 6 (report by Dr. Gibbes).—This tumour consists of large masses of stratified squamous epithelium, in the centres of which are many epithelial nests. In the middle of these masses runs a small quantity of fibrous tissue, which is infiltrated with small round cells, and a small blood-vessel is present in the centre. These small round cells are found throughout the whole growth in

large numbers, and from their varied shapes they are evidently in an active state of division. The nuclei of the squamous cells themselves are also in many places germinating, and have formed large cells filled with the products of the division of the original nuclei. This is seen in many parts of the superficial epithelium, and in places cysts seem to have been formed, which are now filled with a fibrinous mass. There are a number of blood-vessels running through the fibrous tissue. The tumour has all the usual characters of an epithelioma.

CASE 7 (report by Dr. Gibbes).—This growth consists of a number of delicate filiform processes. Each of these consists of a central stalk from which branch several secondary processes. They are formed of a very delicate connective-tissue in the centre, which is infiltrated with small round cells, and they are covered with a stratified layer of columnar epithelium, which resembles that of the normal bladder. This epithelium is set on a nucleated basement membrane; a large blood-vessel enters at the base of each villus, and branches as it goes on until it finally breaks up into a network of capillaries, which lie directly under the basement membrane. In some places these capillaries may be seen to have ruptured on to the external surface. The whole growth is very vascular. Many of the columnar epithelial cells are distended with mucus. In some of the villi there are crypts lined with columnar epithelium similar to that on the surface.

CASE 8 (report by Dr. Gibbes).—The growth consists of a number of very delicate filiform processes covered with layers of columnar epithelium cells. Each process is formed of a fine connective-tissue, infiltrated with small round cells; the epithelium is arranged in several layers on the surface. In each process are a number of capillary blood-vessels, which run towards the surface and branch directly beneath the epithelium.

The growth is very vascular, and in some places the vessels are much distended with blood. The vessels are ruptured also in several instances, and masses of blood

are seen on the surface; whether this was done in the act of removing the growth it is impossible to say with certainty. There is nothing malignant about the tumour; it is entirely composed of normal bladder tissue.

CASE 12 (report by Dr. Gibbes).—This tumour appears to be an hypertrophy of the sub-mucous coat of the bladder.

The muscle appears normal, but the tissue inside it is composed of dense bands of fibrous tissue, which have a macerated or soddened appearance, as if there had been great cedema into them; nearer the epithelium the fibrous tissue is much finer, and directly under the epithelium it has a reticulated appearance, exactly resembling granulation-tissue in the bottom of a healing wound. The epithelium on the surface resembles that of the normal bladder in every respect. The blood-vessels in the depths have very thick walls, and are surrounded with round cells in some places. The capillaries run directly to the surface, generally without branching, and are there ruptured in many places. They are also ruptured in some parts of the deeper tissue, and there are many spots of extravasated blood. There are collections of round cells in some places, resembling lymphoid tissue, and these are arranged in round or oval masses. There are no villous growths in that portion of the tumour examined.