CLINICAL LECTURE ON ONE HUNDRED CASES OF TUMOURS OF THE URINARY BLADDER.

Delivered at the London Hospital.

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GENTLEMEN,—I have various reasons for selecting the subject of tumours of the urinary bladder for my clinical lecture to-day. Foremost among these is the desire to place before you some of the conclusions I have drawn from an experience of over a hundred proved cases of the disease. This material, moreover, permits me to reiterate and to emphasise the opinion I expressed in 1888¹ upon the diagnostic and prognostic capacity of the electric cystoscope. The subject is too wide to allow of its compression into a single lecture, so that I shall select those points which seem to me to have an important practical bearing upon the judicious and successful treatment of the disorder.

Any textbook will give you the pathological varieties of vesical growth, but for my present purpose I shall ask you to consider them under their simplest clinical divisions—that is, according to their benign or malignant character. As the vesical tumours encountered in childhood are very rare, mostly of the sarcomatous type, always inoperative and invariably fatal, my remarks will refer to adult life of both sexes.

Tumours of the bladder, like similar formations of other mucous surfaces, vary greatly in their rapidity of growth and destructiveness. We are able to recognise a succulent form of epithelioma of the mucous membrane of the bladder which, in its initial symptoms and in its comparative torpor resembles the various forms of villous papilloma for a short period. This fact compels us to subdivide malignant growth, and to form three groups: A. Benign tumours, papillomata. B. Succulent epithelioma of the mucous membrane. C. Denser, rapidly destructive epithelioma invading the muscle wall almost as soon as the mucous membrane.

THE FREQUENCY OF THE OCCURRENCE OF THESE THREE VARIETIES.

I cannot furnish accurate statistics concerning the frequency with which you will encounter the slow-growing surface epithelioma, for up to quite lately such cases were sent to me only in advanced periods, when they had already commenced to infiltrate, and when invasion has taken place they resemble the denser forms. Benign tumours may be placed as occurring in 20 per cent. of all cases.

CLINICAL HISTORY.

Each of these three groups possesses a well marked clinical history. Now the onset symptom, or group of symptoms, which first attracts attention to the urinary organs, does not herald the birth of the growth. The onset symptom really marks the termination of the first stage of 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 possess a surface characteristic of the type to which it belongs, and to be of a size above that of a monkey nut. Again, in examining cases by the cystoscope on the recurrence of the symptoms after operation, I have found that the hæmorrhage only appears when the tumour has reached a decided size.² Tumours have, moreover, been met with by chance in the *post-mortem* or dissecting rooms, and it has been ascertained that they had

given rise to no symptoms during life; the patient having succumbed to some other disease before the first stage of the tumour had been passed through. This first stage may be conveniently called the "latent" stage.

The latent period is brought to an abrupt termination either by the appearance of blood in the urine, or by the sudden development of irritability of the bladder and pain on micturition. Most writers since Gross have laid stress upon the character of these onset symptoms as being indicative of the nature of the growth, and have asserted that the appearance of hæmaturia points to a benign character, but that vesical irritability reveals a malignant type. We now know this to be a mistake, for the softer forms of epithelioma bleed some months before they commence to infiltrate.

We possess accurate facts which permit us to assert that 92 per cent. of benign growth and a large proportion of malignant growth mark their transition from their latent first period to the second period of their existence by the appearance of blood in the urine. The importance of this statement cannot be overestimated when we remember that it is only in these two classes of tumour that operative procedure is indicated and advisable. The third and infiltrating group, which starts with cystitis, is quite inoperative. We shall therefore confine our attention strictly to the first two groups.

The onset hæmorrhage from a benign growth differs sometimes from that caused by a succulent epithelioma of the mucous membrane. In the former the loss is generally slight, consisting most often of a few drops of blood at the end of a clear micturition, or of a single evacuation of rosy coloured urine. Its advent is nearly always causeless. In epitheliomata, however, the patient often attributes the onset to a strain, to jolting in a conveyance, or to overfatigue. The onset hæmorrhage is not infrequently more profuse. Both hæmaturias, however, share this characteristic, that they are at first painless and unaccompanied by vesical irritability, unless, of course, there is retention or blockage from clot. The hæmorrhage is intermittent in both groups, but in the benign the intervals of perfect health and normal urine are longer than in the epitheliomata in the proportion of years to months. It is, however, not the only symptom in the second period. Should the papilloma become pedicled, or should it tend by its position to obstruct the free outflow of urine, other symptoms will be superadded to the hæmaturia, such as obstruction to the stream, straining, and pain at the end of the penis. It is usually rare for this to occur within the first two years. Sooner or later both forms of growth will enter upon their third period—namely, that in which cystitis appears as a complication.

In benign tumours the third period may be delayed for fifteen, or for twenty or more years (Cases 53, 61); but once cystitis has set in, renal complications are apt to supervene, and the operation for removal has but an indifferent chance of success. With the epithelioma the advent of the third stage is of course much more rapid. The growth begins to break down and infiltrate usually after nine months of painless hæmaturia, and then all hope of successful removal is gone.

DIAGNOSIS.

Intermittent attacks of hæmaturia, unaccompanied by urinary pain, frequency of micturition, or obstruction to the stream, occurring in a patient about or over 30 years of age, who has intervals of perfect health and normal urine should be regarded as most suspicious indications of vesical growth. An examination of the urine usually affords a clue to the vesical origin of the hæmorrhage: vesical characters being the formation and passage of large irregular-shaped clots, of brightish blood-coloured urine and of the appearance of blood at the completion of clear urination. Although any one of these characters may be absent at any one particular time in the second stage, yet they may be met with at another, and inquiries should be made concerning them. Moreover, in a small percentage of the cases (19 per cent.) scraps of growth are passed, and these are certain evidences of the vesical position of the tumour.

It is well to remember that "villous" scraps are quite unreliable as guides to the benign character of the tumour, for 41 per cent. of vesical carcinoma have a surface covering of villous processes; and *pure villous* tufts coexist in one-sixth of the sarcomata and in one-fourth of the epitheliomata.

¹ Author, BRITISH MEDICAL JOURNAL, April 14th, 1888; *ibid.*, October 13th, 1888; *ibid.*, May 9th, 1889; *ibid.*, October 18th, 1890.

² I have met with two exceptions, Cases 56 and 57, both of which were examined within two months of the initial hæmaturia; one was the size of a pea, the other the size of a split pea.

DISEASES SIMULATING TUMOURS.

There are four groups of diseases of the urinary tract which evoke similar symptoms to those produced by benign growth in the bladder, and although the electric cystoscope in an educated hand will render the diagnosis certain in the majority of cases yet the instrument is not always available. It is therefore advisable to remind you of them.

1. Prostatic congestions in young men from excessive masturbation or sexual intercourse produces an intermittent symptomless hæmaturia.

2. In men over 50 a small uric acid calculus in an insensitible bladder or lodged behind a prostate produces a similar train of symptoms.

3. Certain renal hæmorrhages such as are produced by latent carcinoma of the kidney or by chronic contracting granular kidney (West, Bowlby) need careful elimination by renal palpation and microscopical examination for casts, for they also induce a symptomless hæmaturia.

4. Lastly, urethral caruncle in the female often simulates a vesical papilloma.

But presuming you have made up your mind that the case is one of vesical growth, what circumstances would incline you to take a favourable view of the character of the tumour? Undoubtedly the length of time which the symptoms have lasted without inducing cystitis. If the bleeding has lasted for more than five years and the patient has not reached middle life there is every prospect of the tumour proving a pure papilloma.

On the other hand, when the patient has passed 45, when the onset hæmorrhage has resulted from some slight violence, when it is copious to begin with or rapidly becomes violent and resists the action of hæmostatics, there is a grave fear that the tumour is a succulent epithelioma of the mucous membrane. I must confess I am still further inclined to view its character with suspicion, when I learn that there is a family history of longevity, or that the patient has passed through some severe mental strain, or some exhausting illness such as epidemic influenza, prior to the commencement of the symptoms. A strong history of carcinoma in the family may be present either with the benign or with the malignant growth. It should not bias you. I have removed growth from a bladder of one lady who had had two operations for carcinoma of the breast, and the tumour I ablated was a typical instance of pure fibro-papilloma. This was four years ago and she is still free.

INJUDICIOUS TREATMENT.

Now, it cannot be too strongly impressed upon you that the benign tumour, and the succulent epithelioma before it has commenced to infiltrate, are both removable by operation provided only that they are attacked in the favourable period of their existence. The former can be ablated with a fair chance of permanent cure, and the latter with a fair hope of an increased length of life. In both cases the operative removal can be carried out without danger, without mutilation, and without any fear that a fistulous and leaking wound will be left behind. But this promising result depends absolutely upon the manner in which the tumour has been treated by the medical man prior to the operation. If cystitis has been induced—and it often is by injudicious zeal—that is to say, if the third period of its existence has been artificially hastened, the patient's chance of a sound and speedy recovery after operation is greatly lessened, nay, more, his chances of a speedy recurrence is greatly increased.

Let us consider, then, how cystitis influences the result of such an operation. When cystitis complicates a benign tumour, slight one-sided pyelitis is often also induced; for these growths are mostly situated over or around the ureteral orifice, and they obstruct and dilate the ureteral canal, which becomes readily inflamed by contiguity. Moreover, the wound left by the ablation heals slowly and sluggishly, and the hæmorrhage may continue for days after it should have ceased. The increased vascularity of the mucous membrane around the site of the growth fosters any tendency to recurrence of the tumour. The suprapubic or perineal wound obstinately refuses to close. When cystitis has appeared in a bladder affected with succulent epithelioma, the pabulum of blood brought to the tumour, and therefore the

rate of progress of the growth, is increased tenfold. The inflammatory wave attaches the movable and previously healthy base of the tumour to the muscular wall, and the latter becomes rapidly infiltrated. The operation would probably will never heal, but will become more or less quickly implicated. It therefore behoves us in dealing with a case of symptomless intermittent hæmaturia to be very chary in the use of the catheter or sound. If it is considered necessary to employ the latter, let it be manipulated with the utmost care. Do not attempt to separate or scrape off a piece of growth for examination, for in nearly every case the most gentle sounding will increase the hæmorrhage, and such roughness as this will change a controllable bleeding into a profuse and persistent loss, besides inducing cystitis. As regards washing out the bladder in order to arrest an alarming hæmorrhage or to remove a solid mass of blood clot which is causing retention, let the instruments be aseptic and the water you employ sterile. Septicity introduced brings disaster on your patient and discredit on yourself.

TREATMENT.

Your treatment will be mainly directed towards arresting the hæmaturia in the second stage, and in the later period to relieving the pain and irritability of the bladder by means of sedatives. In the earlier attacks of bleeding, any hæmostatic will usually suffice—gallic acid, ergot, alum, iron, combined in every case with opium, may be tried. When the hæmorrhage has once become established, it is often most rebellious. In some cases it is so furious that nothing short of cystotomy and removal of the surface of the growth arrests it. Presuming you are dealing with a vesical growth, the advice you tender to your patient concerning operative interference will be controlled mainly by the presence or absence of cystitis, and by the condition of the wall of the bladder as felt through the rectum or vagina. Should any dense infiltrated patch be felt in the vesical muscle wall, operative interference for the ablation of the growth will be perfectly useless. All that can be done in these cases, I believe, is to attempt to relieve the torture of micturition by perineal or suprapubic drainage. Even this, I regret to say, is insufficient to alleviate the agonising spasmodic pain with which some cases are afflicted. If no infiltration be felt and no cystitis be present, the sooner the patient is operated upon the better.

This patient, aged 54, is an excellent example of what may be done in succulent epithelioma, even when the strength is exhausted by bleeding and the growth is of large size. He was brought to the hospital three weeks ago by my late dresser, Mr. C. A. Harrison. He was breathless from bronchitis and emphysema, debilitated and blanched by profuse and long-continued hæmorrhage. You saw me remove a growth from the right side of the base of the bladder through a suprapubic incision. The growth fills this 6-ounce graduated glass. Within a week the tube was removed, and now the wound is dry and almost healed. All his water is passed naturally, and I can safely assure him that he will continue well for some months. The operation was a very simple procedure, as it always is in suitable cases. I do not use either the Trendelenburg position or a rectal bag, for neither are necessary if cystitis has not supervened. A 2-inch suprapubic median incision, starting from the pubes, is made, the recti are separated, and the bladder, which has been previously distended, is hooked up, and a 1-inch vertical incision is made into the viscus. Two blunt button hooks are then inserted, and the dresser holds the ends of the wound taut by these, while a caisson³ is slipped into the bladder and directed towards the place where the growth has previously been seen, by means of the cystoscope, to be placed. The open end of the caisson is rested on the growth, and the water is sucked out. A head lamp or mirror throws light upon the tumour, which is then twisted off or torn away piecemeal by means of long catch forceps. When all the surface of the growth has been removed the base is attacked. It is either snipped off by means of scissors, or cut away with a lance-pointed knife. The hæmorrhage is checked by firm pressure of a sponge dipped in a solution of iron, and double drain tubes are inserted. The bladder is now washed out through the tubes and the patient removed

³ Author, Caisson Working in Bladder Surgery, *BRITISH MEDICAL JOURNAL*, November 19th, 1892, p. 1111.

to bed. In three days' time the tubes are removed, and in a week the patient is up. I do not remember a case in which the wound has not closed before the end of the third week. I do not always use the caisson. Sometimes I drag the growth to the opening in the bladder and dissect it off the wall. In women, after careful dilatation of the urethra, I employ the same manoeuvre. I seize the growth with long narrow forceps, bring it to the opening of the urethra, and dissect it off the muscular wall, or twist it off its base. An operator should never forget that an incomplete removal is tantamount to an early recurrence, whether the tumour be benign or malignant.

RESULTS.

I have operated thirty-two times with a definite object of removing tumours which I had diagnosed as being present. My first case proved a mistaken diagnosis, for the tumour was merely a small papillomatous-like tag coexisting with tuberculous disease. In another, a female case, I deemed it best to leave the tumour alone, but, probably with my increased experience and better methods of removal, I should not again hesitate to dissect a similar growth away. It proved to be a

very dense epitheliomatous ulcer. On thirty occasions I have removed tumours. The perineal operation was performed three times, because the growth was near the urethral orifice, the female urethra was dilated in eight instances, and the suprapubic route was chosen nineteen times. I regret to have to chronicle two deaths as the direct result of the operation. Both patients were males, both were the subject of a small but pure villous papilloma. The operation was easy in both cases, but both cases died of suppression. Unknown to me, both had had epidemic influenza three or four days before I operated. (*Cf. List.*)

NATURE OF THE TUMOURS.

The microscopy of growth removed by operation is so unsatisfactory that I should not like to say how many of the cases were purely benign; probably twenty were benign growths.

RECURRENCES.

One carcinoma recurred three months after a very thorough removal, but then cystitis was present when I operated. He died. Four other cases have recurred and have been operated upon. All the cases, with the exception of the three cases I

List of Consecutive Cases of Removal of Vesical Growth.

Initial.	Age.	Medical Attendant.	Cystoscopic Diagnosis.	Operation.	Result.	Published.
R.	40 (M.)	Dr. Fly Smith	Phosphatic encrusted carcinoma	Suprapubic (July, 1889)	Rapid healing. Recurred in 3 months. Necropsy	<i>Elect. Illumination of Bladder.</i> Second Edition, p. 107
Mrs. B.	44	Dr. Oldfield	Small pedicled epithelioma left ureter	Urethral dilatation and ablation (February 21st, 1889)	Recurred twice. No symptoms since last removal, January 10th, 1891	Ditto, p. 167
Mrs. C.	60	Dr. Field (of Bath)	Hazelnut-sized sessile fibro-papilloma left ureter	Urethral dilatation (April, 1889)	Still well. June, 1893	Ditto, p. 163
Mrs. W.	64	Dr. Wilson (of Ayr-shire)	Large sessile fibro-papilloma right base	Urethral dilatation (December, 1889)	Severe hæmorrhage, but recovered rapidly. No recurrence. July, 1892	Unpublished
Mr. K.	48	E. H. F.	Very large sessile fibro-papilloma left side of base	Suprapubic (December, 1889)	Died	Ditto
Mrs. W.	60	Dr. Murphy (of Twickenham)	Large walnut-sized pedicled villous papilloma right ureter	Urethral dilatation (January, 1890)	Rapid recovery	Ditto
S.	32 (M.)	London Hospital Case	Three large fibro-papillomata right base	Suprapubic (April, 1890)	Recurred and removed May, 1892. Recurred and removed May, 1893	Ditto
Mr. H.	25	Dr. A. E. Kennedy (of Plaistow)	Large villous papilloma posterior wall	Suprapubic (June, 1890)	Rapid recovery. Remains well	Ditto
Mr. D.	35	Dr. Carline (of Lincoln)	Large villous tumour left side of urethra	Perineal (August, 1890)	On two occasions a little blood after coition. April, May, 1893	Ditto
Mr. W.	40	Dr. Squire (of Birmingham)	Large villous papilloma of right base	Suprapubic (May, 1891)	Rapid recovery. Still well, but cystoscopic evidence of slight recurrence. April, 1893.	Ditto
Mrs. L.	71	Dr. Aston-Ayres (of Balham)	Small area of sessile villous growth left base	Urethral dilatation (May, 1891)	Still well	Ditto
Mr. E.	34	Drs. R. H. Nicholson and Zimmerman, R.N.	Very small pedicled papilloma left base	Suprapubic (May, 1891)	Died of suppression	<i>Cardinal Symptoms of Urinary Disease,</i> p. 272
Mr. A.	44	Dr. H. G. Smith (of Sittingbourne)	Small sessile villous papilloma inter-ureteral bar	Perineal (June, 1891)	Rapid recovery	Unpublished
Mr. D.	46	Dr. Morgan (of Pontypridd)	Epithelioma left side	Suprapubic (September, 1891)	Rapid recovery. Recurred and removed December, 1892. Again recurred (?) April, 1893	Ditto
Mr. R.	32	Dr. Henry Kempster	Polypoid fibro-papilloma right side of urethral orifice	Suprapubic (June, 1892)	Rapid recovery. Still well	<i>Cardinal Symptoms,</i> p. 42
U.	52 (M.)	Hospital case	Small villous papilloma left ureter	Suprapubic (September, 1892)	Rapid healing	Unpublished. Shown at Medical Society
C.	22 (M.)	Hospital case	Monkeynut-sized villous papilloma at right ureter	Suprapubic (January, 1893)	Rapid healing	Ditto
W.	42 (M.)	Hospital case	Large succulent epithelioma on right base	Suprapubic (March, 1893)	Growth removed filled a 3-ounce measure. Rapid recovery	Unpublished
L.	53 (M.)	Hospital case	Villous surfaced epithelioma right base	Suprapubic (April, 1893)	Rapid healing	Ditto
Mr. I.	43	Dr. Hunter (of Matlock), Dr. H. H. Taylor (of Brighton)	Villous papilloma right base	Suprapubic (April, 1893)	Rapid healing	Ditto
Mrs. A.	37	Dr. Male (of Grays)	Epitheliomatous growths of base	Urethral dilatation (April, 1893)	Greatly relieved, but slight cystitis remains	Ditto
Mr. P.	60	Dr. Keay (of Colne)	Large villous epithelioma left base	Perineal (May, 1893)	Healed well	Ditto
L.	?	Mr. C. G. Harrison	Villous epithelioma	Suprapubic (May, 1893)	Fragments filled 6-ounce measure glass. Healed well	Ditto
Mr. L.	60	Mr. Couper Cripps	Sessile epithelioma right base	Suprapubic (June, 1893)	Healing	Ditto

have mentioned, are living and in good bladder health. It is, however, too early to speak about "cure," for five years have not elapsed in any case, though one has already passed the fourth year in perfect health.

I shall again report, if possible, the condition of each in a later communication.

I attribute much of my success to a careful selection of favourable cases by means of the cystoscope, and here I would remark how very fully the character of that instrument has been vindicated by these results.

Not only have I only once cut into a bladder (my first case) to remove a tumour which did not exist, but I have been enabled to select, out of a hundred cases of vesical growth, those cases which repaid operative interference. Moreover, out of some hundreds of cases of obscure urinary disease, it has enabled me to select at least fifty cases of vesical growth the existence of which I should have been unable to pronounce with certainty without digital exploration. Much needless instrumentation and operation has thereby been avoided.

I may mention that I am much influenced, among other conditions, by the colour of the tumour. If the tumour surface be translucent and of a pinkish hue and exhibits no signs of necrosis, I know that I am dealing at least with a growth in a favourable stage. The smoother the tumour the more I am inclined to suspect its deeper origin, for surface epitheliomata have a great tendency to produce a true villous surface. If the tumour is white or greyish white I invariably diagnose epithelioma. It is also extremely suspicious of malignancy to see a powdering of white phosphate of lime upon a tumour which has only lately declared itself.

I can assure you that the removal of a growth of the favourable type from the bladder is a simple and safe operation. That danger, if danger exists, lies in attacking carcinomata in their advanced stage or in ablating tumours of a benign type which have been long enough in existence to cause serious renal changes from backward pressure or which have been suffered to enter the period of cystitis either by neglect or by maltreatment. Finally, I urge upon you the necessity for regarding non-infiltrating tumours of the bladder in the same light which you are taught to look upon stone in the bladder. The sooner the operation is performed the better for the patient.

ON A

NEW THERAPEUTIC METHOD CONSISTING IN THE USE OF ORGANIC LIQUIDS EXTRACTED FROM GLANDS AND OTHER ORGANS.

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(Concluded from p. 1147.)

VII. *Importance of Injections of Organic Liquid from the Sexual Organs.*—It is well known that I made my first communication on the orchitic liquid on June 1st, 1889, at the Société de Biologie, and that after several other communications at that Society, I published an account of my experiments, views, and conclusions in the *Lancet*, July 20th, 1889. I will not repeat here what was said in those various papers, nor insist on showing, although there is most abundant proof of it now, that instead of going beyond what facts warranted, all my conclusions did not go far enough. The case of Professor Carl Vogt, of Geneva, published by himself; the case of an English gentleman, 91 years old, published by Dr. Variot; the case of a lady, 96 years old, published by Dr. Depoux; the case of a gentleman, 93 years old, treated by Dr. Mésnet; and many others, positively establish that a good deal more than what I observed on myself has been obtained in a large number of old people.

Last year, after two communications I made at the Académie des Sciences⁵, Professor d'Arsonval and myself agreed to furnish all kinds of organic liquids that might be asked for by medical men, with this condition, how-

ever, that the history of the cases should be sent to us. More than 1,200 practitioners accepted our offer, and we have received upwards of 1,600 cases that have been treated by the orchitic liquid. No one will be more astonished than we were ourselves in reading day by day the wonderful results that were reported to us. I will refer those persons who wish to know these results to the *Comptes Rendus de l'Acad. des Sciences*, vol. cxvi., April 24th, 1893. I must, however, say that of 405 cases of locomotor ataxy treated by the orchitic liquid, we find that, after eliminating 63 cases in which the diagnosis, perhaps, was not sufficiently grounded, there are 342 cases out of which there were 314 cases of great amelioration or cure. Besides those cases Dr. Depoux, out of 13 cases he has treated, counts 5 cases of complete cure (the 5 patients were shown at the Société de Biologie), 6 of progressing ameliorations, and 2 failures. An able physician of Havre, Dr. Gibert, has had 2 cases to treat, and in each has had a cure. Victoroff, of Moscow, in a considerable work (of 300 pages) on the orchitic liquid, gives 7 cases, in 5 of which he has obtained either a cure or a great amelioration. A number of other medical men, and especially Ouspensky, have had the same proportion of cures and ameliorations. The various other kinds of sclerosis of the cord give a proportion of 85 per cent. of cures or ameliorations, while ataxy gives about 90 per cent.

To our utter surprise, an organic affection, which we did not think could be ameliorated, is, on the contrary, the one, of all kinds of disease, which has given the largest proportion of ameliorations; that affection is cancer when located superficially. We knew in April last the effects of treatment in 103 cases. If we put aside 6 cases in which death was impending, and was only delayed by the treatment, there was a considerable amelioration in the 97 other cases. It consisted in the healing of ulcers, the cessation of pain, of insomnia, of hæmorrhage, of all appearances of cachexia, and of every other symptom, except the presence of the tumour.

There is no other serious affection of any kind which has not given us a good proportion of cases of considerable amelioration. I will only say that the favourable results obtained in the treatment of pulmonary tuberculosis in the Hôtel-Dieu Hospital of Paris by Drs. Dumontpallier and Variot, and at the Charité Hospital by Professor Cornil and Dr. Hénocque, and also at Lille by Professor Lemoine, have been confirmed by more than 60 medical practitioners of Paris or of the French provinces.

A remarkable fact shows that symptoms allied with or due to an organic disease, even in the most important organ, will yield more easily to the action of the orchitic liquid than pure neuroses. Chorea, however, forms an exception, as demonstrated by the success obtained by Professors Ollier and Tessier, and a great many other practitioners. The only affection which has resisted treatment is epilepsy, but hysterio-epilepsy and hysteria do yield to it.

We reserve the question of cure of organic diseases. All that we have just stated applies to the cessation of morbid manifestations. We know, however, cases of cure of ulcers (in leprosy and cancer), of disappearance of a fibrous tumour of the womb, and of morbid deposit of connective tissue in the heart, the arteries, and muscles.

As regards morbid manifestations, experimental facts give an additional weight to that of clinical facts with regard to the powerful therapeutic action of the orchitic liquid. I have seen guinea-pigs paralysed by the section of a part of the base of the brain, or that of almost the whole lateral half of the spinal cord, recover in a great measure and very promptly the lost functions under injections of the liquid. I have also seen a great amelioration in pigeons rendered ataxic by a slight lesion of the part of their cord called the spinal ventricle.

Experiments have shown me that pregnant guinea-pigs in similar circumstances, except that some receive an injection of 1 gramme a day of the orchitic liquid, give birth to young very different, one set from the other, the young whose mothers received the liquid being larger, heavier, and stronger than the other set. A most important case of Dr. Kahn shows the same thing in the human race. A woman, ataxic and in very poor general health, being pregnant, there was no movement of her child at the sixth month. Injections having been made, the child soon began to move, and with energy. When born he weighed 5 kilogrammes and was extremely

⁵ *Comptes Rendus de l'Acad.*, vol. cxiv., Mai 30 et Juin 7, 1892.