should be used warm, and oftentimes much additional benefit is gained by heating them to a temperature of from 110° to 120° F. In some cases of long-standing chronic cystitis with very foul urine, injections of a weak solution of nitrate of silver, one-half grain to one and one-half grains to the ounce, or of a solution of acetate of lead, sometimes work very well.

In the next lecture we will discuss the operative treatment of the hypertrophied prostate.

THE RESISTANCE OF THE BLADDER TO INFECTION.

SURGICAL CLINIC AT THE NECKER HOSPITAL, PARIS.

BY PROFESSOR FELIX GUYON.

THE patient we desire to study to-day you will find in No. 19 bed, Laugier ward. She first came here last November, went out, and then came back to us in February. She is twenty-four years of age, and has no hereditary predispositions of interest. She came here simply because for the past three years her urine has been thick (exhibits a large deposit on standing, and smells badly). We examined her urine and found that it contained pus. The patient has no other functional symptoms,—no frequency in urination, no pain in passing water,—but she says that she has shooting pains in the right iliac region. This caused us to examine her, and we found in the right portion of the body of the uterus and adhering to it a large mass, which held on to the walls of the pelvis and had a prolongation going down to the bladder.

What connection can such a tumor have with the state of the urine? The endoscope gave us an answer to this question. As it lit up the bladder we found a small orifice on the right side, from which pus was escaping. Two months ago pus came away in considerable quantity when we pressed on the tumor, but now it is difficult to obtain any even after considerable pressure. So, then, there is a direct communication between this tumor and the bladder, but there are no signs of cystitis, as we usually see it. The aspect of the bladder under the endoscope shows that the mucous membrane is normal, the color being that of a healthy bladder, and when any instrument is passed around the surface of the bladder there is no sensitiveness. As to the sensation by distention, we passed four hundred and fifty grammes of water (nearly a pint) before there was the slightest sign or desire to urinate; she did not empty the bladder until it had received five hundred and thirty grammes: so that this organ is normal, and there is not the slightest

sign of any anatomical modification of the mucous membrane of the bladder. We must therefore conclude that there is no cystitis.

The bacteriological examination of this urine presents some interesting points. Two inoculations were made with it on the 29th of February, one in a guinea-pig and one in a mouse. The first animal died in five days without any particular lesion, and the mouse is still alive (April). The cultures made with the blood of the kidney and heart of the dead animal remained sterile. Remember this point, as we can draw a lesson from it later. Then with the same urine cultures were made, which gave us ovoid forms of bacteria sometimes united in chain form. On the 3d of March these cultures were repeated, and gave positive results, and on the 9th of March the culture was inoculated in a guinea-pig's peritoneum. The animal died the same night, and at the autopsy we found that there was a thick liquid in the folds of the peritoneum and some perihepatic adhesions. This liquid contained a large number of ovoid bacteria, and cultures were made of the blood taken from the heart and kidney, which all gave the well-known characters of the bacillus pyogenes.

Such are the facts of this case: on one side a virulent pus that has been thrown into the bladder for three years, and on the other side a bladder that has remained healthy under this. The question is put to us, Is this usual? or is it abnormal? or does the bladder resist infection? To my mind it is normal, and clinical observations, as well as bacteriological experiments, confirm this view of the matter, which I have held for some time.

That a cystitis can be produced only by the intervention of a microbe is certainly an established fact. One of our internes, Dr. Reblaud, confirms this in his thesis on "The Etiology and Pathogenesis of Non-Tubercular Cystitis in Women." A microbe certainly plays the most prominent part in the production of cystitis, but its presence alone is not sufficient to produce the disease. You see by our present case that the bladder will remain quite indifferent to it, and will continue so just as long as the mucous membrane has not undergone such modification as to allow of the micro-organisms fixing themselves in it and hatching there. These conditions must be properly studied, otherwise you will not have a true idea of the pathogenesis of cystitis. The case we have given shows you the resistance of the bladder to infection, and brings up the question as to what are the conditions that will permit this resistance to be overcome and allow of the implantation of the micro-organism in the mucous membrane and the subsequent appearance of a cystitis. The morbid conditions in question are those that clinical experience has enabled us to observe for a long time back, and their study will once more prove that, in most cases of disease, for a morbid sowing of unhealthy seed to prosper it is absolutely necessary that the ground be properly prepared. It is not enough that the seed be sown; it must take root. The proper conditions in question are of both a physiological and a pathological nature, and these two must be kept in sight in making a study of any infection.

Let us first of all examine into the question as to what are the necessary conditions for microbian invasion. As far as cystitis is concerned, they may be stated as being three in number,—*retention*, *congestion*, and *traumatism*. Let us start with the last, which is least in importance. M. Reblaud has made a number of experiments in regard to this matter, and he found that small traumatic lesions, even with micro-organisms in the bladder, did not cause cystitis. We have frequently scratched the surface of the mucous membrane of the bladder with a sound and pinched it with instruments without causing inflammation. You often see us open the bladder, scrape it, burn it, and drain it, without producing any unpleasant results; and when we do cause cystitis it will yield rapidly to treatment.

With regard to *congestion* it is quite a different matter. We constantly speak of the important part that it takes in the pathology of bladder-diseases. Its influence in the etiology of cystitis we have insisted upon. No matter how important you may fancy the traumatic lesions to be, you will always find them less so than congestion, which will modify the whole extent of the mucous membrane in depth at least, and will make the smallest vessels permeable, and no other condition of these parts is so favorable to the penetration of germs. M. Reblaud made some interesting experiments in regard to this point. Having produced an artificial congestion of the mucous membranes of a rabbit by giving it cantharides, and having found the urine quite free from micro-organisms, he made an injection of pure culture liquid from a preparation of the staphylococcus pyogenes albus, and two days afterwards the urine of the animal gave the characteristic signs of this organism. I must here remind you that the injection of such a culture liquid into healthy veins would not produce this result, and as to the action of cantharides you are all aware that a cystitis can be produced by it, but that the inflammatory condition will rapidly subside, even without the usual injection of an opium product. I, indeed, have never seen this kind of cystitis persist, except in two cases, where there was tuberculosis or where the bladder was already infected by disease.

Let us now examine the third condition necessary for the microbes to enter the system by this route,—that is to say, *retention*. Its importance is considerable, and it can be divided into four heads. 1st. *Stagnation of urine*. 2d. *Congestion*, which may be total and extend to a parenchymatous hemorrhage. 3d. *Loss of the epithelium*. 4th. *Vesical paresis*, which is owing to the distention of the bladder. So that retention alone can produce such alteration of the anatomical parts of the walls of the bladder that it is left open to the action of the micro-organisms. It will do everything necessary to cause infection and keep it up. I am speaking at present of the bladder only, but my studies made with M. Albarran show that the same thing happens for the ureters and even for the kidneys. The resistance, then, of the bladder to infection is broken up by retention: all those who have made experiments on this subject are agreed on this point, and that simple injection into the healthy bladder will not produce disease. Schnitzler claims that he has produced intense cystitis by simply injecting into a rabbit's bladder a culture of urobacillus liquefians septicus, but we have never been able to accomplish it. The virulence of the microbe is, however, an important point, for if all the various kinds produce a cystitis after a retention for twenty-four hours, still they by no means produce the same intensity of inflammation. M. Reblaud has shown that it requires a varying amount of time for retention to produce these changes according to the variety of microbe present. Thus, the micrococcus albicans amplus and the diplococcus subflavus do not cause any reaction after twelve hours' retention, while the urobacillus and the bacterium pyogenes will act in six hours. So that we must admit on the one hand the virulence of the microbe, and on the other that retention is necessary to infection. Our patient, whose bladder is full of the bacterium pyogenes, one of the most virulent, showed that just so long as there is no retention there will be resistance to infection. Here, then, the regular and complete evacuation of the bladder was sufficient to prevent contagion and resist infection. This is a practical point well worth your attention. Let me give you the history of another case.

I operated in 1889 on a man thirty-five years of age who had a pyonephrosis of the right side, and his urine was purulent. By the second day after the operation the urine was clear, much to the astonishment of the patient and of some of the students, who had seen this patient always with purulent urine. I have also called your attention to cases of intestinal trouble where there was a direct communication with the bladder, and notwithstanding the flood of coli

bacilli into the organ it resisted infection, and no cystitis took place. Professor Bouchard has shown that infectious maladies may cause nephritis and the microbes are eliminated by the urine, and yet how seldom have such troubles been followed by nephritis! We do not, however, mean to say that the conditions of infection are never influenced by the general state of the patient.

After what I have said it seems difficult to accept any idea tending to prove that cystitis varies according to the *kind* of microbe that produced it; no such classification of cystitis can be accepted. There is nothing in the symptoms or in the evolution of this disease that shows that it is different according to the *kind* of micro-organism causing it. The fact that there are microbes involved is, of course, important, but they are not indispensable to its production, while they certainly contribute to keep it up and preside over its birth, so to speak. When they disappear the inflammation begins to subside. The theory, then, of the etiology of cystitis should continue as it is accepted at present, and serve as the basis of all classifications, while we may add to it the pathogenic theory; but we should not substitute one for the other.

INTRA-VESICAL FATTY TUMORS.

CLINICAL LECTURE DELIVERED AT THE JEFFERSON MEDICAL COLLEGE HOSPITAL.

BY JOHN H. BRINTON, M.D.,

Professor of the Practice of Surgery and Clinical Surgery at the Jefferson Medical College, Philadelphia.

GENTLEMEN,—The case which I shall now bring before you is one of great interest. The patient is a Hebrew peddler, about forty years of age, and comes to us from Honesdale, in the interior of Pennsylvania. His trade or business requires him to be constantly on his feet, and he frequently walks many miles in the course of a day. He first came to this hospital in 1884, and was then treated by Dr. Barton, one of the hospital surgeons. This was his history at that time. He had suffered for several years with hæmaturia, accompanied by vesical irritation. His urine contained pus and phosphates, and there was evidently cystitis, but microscopic examination failed to detect any shreds of foreign tissue. There was no enlargement of the prostate, nor could any calculus be detected. With the sound, however, several elevated and irregular places were discovered. Examinations of the bladder were usually followed by bleeding. Under injections of borate of sodium he improved rapidly, and left the hospital, but again returned in September, 1885.

He was at that time brought before the class by Dr. Barton, whose clinical remarks were published at length in the Philadelphia *Medical Times*, September 5, 1885, p. 905. From these I learn that the patient was then urinating more than fifty times in the twenty-four hours, with frequent passage of blood; the bleeding, occurring at intervals for more than four years, was the first symptom noticed. The blood was always fresh, of bright-red color, and, when floated in water, assumed the form of flattened, irregular patches. The absence of calculus and of marked prostatic trouble, the age of the patient, the comparatively healthy condition of the urine, and the want of evidence of ulceration

on the walls of the bladder, all tended by exclusion to refer the difficulty to some form of bladder-tumor.

Acting on this supposition, Dr. Barton performed the median section, and, having introduced his finger, was able to detect a soft, velvety mass springing from the upper surface of the bladder, which when removed by the forceps afforded the characteristic appearances of papilloma. Some slight hemorrhage followed the operation; this, however, soon ceased, normal micturition was soon resumed, and the patient left the hospital entirely relieved. For six years he carried on his business of peddling, but during 1891 his vesical symptoms gradually returned.

In January of the present year he again entered the hospital, under the care of Professor Forbes, who on the 20th of that month performed a left lateral lithotomy, and removed from the bladder several masses of what appeared to be papillomatous growths. After this operation he improved somewhat, and was discharged from the hospital towards the end of February. Since then the vesical irritation has returned, and in the early part of the present month he was readmitted for treatment. He complains now of excessive irritability, which is increased when he is on his feet and walking. He passes his water every few minutes, and there is some pain in the head of the penis and above the pubis. His urine is phosphatic, and contains a little pus. The wound in the perineum from the last incision is not entirely healed; there is a perineal fistula, and occasional urinary dribbling. The bladder is contracted and very small. I have carefully filled it by simple hydraulic pressure from the douche, and find that its utmost capacity is about two ounces.

It seems to me that the only mode of relieving this man will be by the performance of a supra-pubic cystotomy, careful exploration of the bladder, and the removal of any growths which may be found. This treatment is indicated by the present symptoms and by the past history of the case. I shall doubtless find some sort of tumor, papillary, sessile, or polypoid. In the supra-pubic section, as most often practised, the bladder can be made prominent above the pubis by injection with eight or nine ounces of water, and by the insertion of the rectal rubber bag, holding ten or twelve ounces. In this case we can use the latter, but, as the capacity of the bladder is so greatly reduced, I shall be obliged to attack it deeply seated in the pelvis, the peritoneal fold being carried downward and forward with it. I shall therefore introduce a metallic catheter, dilate the bladder to the greatest extent that its contracted state and the existence of the perineal fistula will permit, and then, cutting through the abdominal walls and pre-vesical fat, open

the vesical wall upon the catheter. This must be hooked close to the pubis, so as to endanger as little as possible the fold of peritoneum.

This external incision I have now made; the bladder-walls are exposed anteriorly; I pass through them two strong sutures, open the bladder between them, and, introducing my finger, I feel some soft pendulous masses; I bring them into view, and find that they are three in number, pedunculated, with vesicular bases, and apparently fatty. I tie them with fine silk to prevent bleeding, excise the masses, insert an india-rubber drainage-tube, close the wound, and send the patient to the ward.

[On May 20 the patient was again brought before the class by Dr. Brinton, who stated that the three tumors he had removed from the bladder in this case had been microscopically examined by Dr. Coplin, and found to be purely fatty. A few hours after the operation the drainage-tube was removed, as the urine passed readily by the urethra.

There was some tympanites after the operation, which passed away under drachm doses of Epsom salts, a little Dover's powder, and rectal injections of Epsom salts and turpentine. After this all unpleasant symptoms disappeared, the patient's appetite returned, pulse and temperature became normal, and the wound healed.]

The peculiarity in this case was the character of the tumors, which were undoubtedly fatty, but which hung down from the upper and left vesical wall: one of these growths was pedunculated, while the others were sessile, with comparatively broad bases. The main vessels, which were distinct and largely injected, ran transversely at the base of the growths. In this case it might have been possible to ascertain the nature of the affection before operation, by electrical cystoscopy, had the condition of the urethra been such as to permit the necessary instrumentation. The tenderness of the urethra, the result of previous operations, however, forbade the attempt.

THE TREATMENT OF CHANCROID.

BY DR. BALZER,

Physician to the Hôpital du Midi,[1] Paris.

GENTLEMEN,—The first indication in the treatment of soft chancre consists in the destruction of the ulceration, which is a real focus of infection, producing, as it does, a highly-contagious pus that is auto-inoculable. It is also the point of departure of secondary lymphatic infection. But in undertaking to crush out the virulence of this venereal ulcer it is well to remember that its influence does not extend below the surface, as a rule. It may extend over a considerable surface, but it does not usually do so: so that it is possible to act against it with energetic agents, such as caustics, the hot iron, and the like. It is also possible to make a complete ablation of the chancre; and Dr. Humbert has lately performed this operation for a soft chancre of the arm. Rollet used the actual cautery, but nowadays we employ the thermo- or the galvano-cautery. As to caustics, Ricord's carbo-sulphuric paste was formerly much used. It was made of powdered charcoal and sulphuric acid, ten grammes of the former to four grammes of the latter, making a half-solid mass. It is not much used at present. Chloride of zinc paste, like the pâte de Canquoin, has been much recommended by Dr. Diday. It destroys the virulent ulcer completely, and does not spread much, but it sometimes goes deeply into the tissues, and has been known to reach the blood-vessels and cause hemorrhage. We recommend the following paste:

℞ Chloride of zinc, 1 part;
Oxide of zinc, 9 or 10 parts;
Distilled water, a sufficient quantity.
Mix, and make a paste.

This may be applied directly on the ulcer, or, better, on a small bit of antiseptic cotton. Its action will soon be manifest, as it causes pain, and very often a little swelling; but it is not dangerous, remains always superficial, and does not need watching. The pain can be borne,

[1] The Hôpital du Midi is a venereal hospital, where Professor Ricord once taught.

and the dressing should be taken off in twenty-four hours, when a slight white covering will be found on the ulcer, formed by the tissues on its surface. One application of this is enough, as a rule, but sometimes it will be found necessary to make two or even three. In certain places, like the fingers or the penis, it is useful to make a permanent bandage of it, which should be changed daily. In fact, this form of paste holds a rank between the real escharotics and the caustics. In a certain number of cases we use weaker caustics in a liquid form, and apply antiseptic agents as well. These caustics are simply applied by drops, every two or three days, and an antiseptic dressing put on in the mean time. Among the caustics, one of the best is the chloride of zinc, either in a saturated or in a ten-per-cent. solution. It is slightly painful, but sure. Iodoform or aristol may be used for the dressings. We have also applied zincated ether or zincated alcohol (1 in 10), and get the same results from them as from the chloride of zinc. Dr. Ducastel used a solution of carbolic acid in alcohol (1 in 10). This is a good method for home or office practice, as it is not painful, and you have not only a caustic action but an antiseptic and an analgesic one besides. This may be followed by the application of an antiseptic powder. Professor Fournier still uses nitrate of silver in a three-per-cent. solution. Sometimes a solution as strong as fifty per cent. has been used. With Dr. Fournier, we prefer weak solutions, which we apply on cotton, and keep on permanently. It is good to remember, however, that these dressings do not always remain limited to the place intended, and the adjoining parts may be also acted upon. This is rare, however, with well-made dressings. Dujardin-Beaumetz has obtained good results with a five in-twenty solution of chloral. Dr. Marc Sée uses silicate of sodium in three-per-cent. solutions. Resorcin has been much praised, in the powder form, or one-to-twenty solutions. We tried camphorized naphthol and salolized camphor when we were at the Lourcine Hospital, as well as the salts of iron,—the perchloride, the citrate, and the tartrate (of iron and potassium). This last, both internally and externally, was much used by Ricord, who said it was the sworn enemy of phagedæna. Like nitrate of silver, these salts are used in strong solutions for touching these ulcers, or in weaker solutions for more permanent dressings. Dr. Besnier, in 1866, recommended iodoform, and it is still much used, notwithstanding its smell. It may be depended upon to cure soft chancre without any other treatment. Every means has been employed to overcome the odor of iodoform, but the best methods do not exert their influence long, and the characteristic odor will return.

Iodol and aristol merit attention. This last is the biniodide of thymol. While they have the great advantage of not being disagreeable in smell, still they are not so effective as iodoform. Iodol forms a sort of covering on the surface of the ulcer which retains the pus. Aristol acts better, and in city practice we often advise iodoform applications at night, and aristol during the day. Two newer substances, europhen and biniodide of thiophen, are without odor, but have not been used as yet sufficiently long for us to reach a definite conclusion in regard to them. The salicylates and salol have not given good results. We use in this hospital a powder composed of chloride of zinc, one part, to oxide of zinc, nine parts. It has no smell, and seems to meet all the indications for the treatment of soft chancre. It is easy of application and costs almost nothing. If found too caustic, we add oxide of zinc in the proportion of fifteen parts to one part of the chloride. Dr. Terrillon endorses pyrogallic acid, one part, and starch-powder, three parts. It is an energetic agent that was first advised by Dr. Vidal. Some of the bismuth preparations have been used in late days, such as sub-benzoate of bismuth, and the gallate base of bismuth called "dermatol." This we tried, but in too small a number of cases to give an opinion as to its merits.

The following was used at the Lourcine Hospital for Women, combined with iodoform, and succeeded very well:

℞ Crystallized acid nitrate of bismuth, 1 gramme;
Distilled water (acidulated with nitric acid), 10 grammes.—M.

About the same time we tried sulphocarbol. This product is a mixture of sulphuric acid and carbolic acid, in the shape of an oil, made by M. Charlard-Vigier. When brought in contact with the skin it did not cause any trouble. Employed on chancres it quickly modified them, and it compares favorably with the best of liquid preparations for this purpose. It may be used pure on small chancres, or in a solution of one in ten on larger ones. Last year we tried, without much success, the application of chloride of methyl and acetanilide. We have more confidence in antipyrin, especially in cases where there may be hemorrhage.

To sum up: any of the antiseptics may succeed in the treatment of chancroid, and, as there are so many to choose from, it may be well to formulate a few rules as to the treatment of chancroid, as follows:

First. Great cleanliness should be observed, and asepsis as complete as possible of the environs of the purulent focus. Local hot baths of 40° C. often give good results.

Second. After the local bath, apply caustics in solution or in paste, and continue them until the virulent ulcer has been transformed into a simple wound.

Third. When this effect has been procured, and in the interval of making the caustic applications, apply dressings of weak antiseptic powders. These should be continued until the wound has been cicatrized.

Besides this, advise rest, and remove every condition that will cause any irritation of the sore. If the patient is weak, of course use tonics.

Thus the rapid and complete destruction of the ulceration by caustics, antisepsis, rest, and tonics is the sum total of the treatment of soft chancre.

Gynæcology and Obstetrics.

POST-PARTUM HEMORRHAGE; ITS USUAL CAUSES AND TREATMENT.

CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA POLYCLINIC HOSPITAL.

BY EDWARD P. DAVIS, A.M., M.D.,
Professor of Obstetrics in the Philadelphia Polyclinic.

GENTLEMEN,—The subject of which I shall speak to-night will be better understood if we first inquire what are the factors which prevent serious hemorrhage after normal labor; and the study of these factors will assist us in understanding the reasons for, and the treatment of, hemorrhage.

A potent agent in preventing the escape of blood in all portions of the body is the condition of the blood itself; its peculiar property of coagulation may be taken as a great safeguard against hemorrhage. You will remember that this property becomes apparent only when a solution of continuity occurs in some one of the tissues of the body; thus, in health, blood circulates freely through the vessels, but should a vessel be wounded or injured by the formation of pathological products within its walls, coagulation readily occurs. The blood of the pregnant woman is especially fitted for coagulation by the increased amount of fibrin which develops as gestation proceeds, so that although the separation of the placenta produces an open wound of considerable size, yet the blood which oozes from this wound coagulates in the healthy woman more efficiently than in the patient in the non-pregnant condition.

Again, the arrangement of the muscular fibres of the uterus is such as to provide an efficient series of constricting bands for the sinuses left patent at the separation of the placenta. "These living ligatures" are ordinarily most efficient, and exist in the same perfec-