appearance of an iodophil substance which very readily diffuses out of the cell; the second phase may occur in the phagocytes before emigration, while circulating in the blood stream, and results in the deposit of iodophil material in the cell.

We have already seen that some marrow cells give the mauve-coloured reaction; these are the neutrophil myelocytes, the precursors of the polymorph leucocytes, and, like them, exhibit amoeboid activity and a capacity for ingesting foreign particles.

Cancer Cells and the Iodine Reaction.

Cancer cells from some (but apparently not all) actively growing cancers give the mauve reaction when examined fresh in salt solution and iodine, they also (like some pus cells) give the mahogany reaction when treated with iodine vapour. (Figs. 3 and 4.) Although I have failed to obtain any evidence of any capacity in these cancer cells to ingest pigment particles when incubated *in vitro*,* we must remember that cancer cells retain certain embryonic and parasitic characters, and the presence of an iodophil substance in cancer cells may have reference to this parasitic capacity.

The following experiments show that the iodophil substance in leucocytes is not destroyed by foreign serum. If two drops of blood, each taken from a different individual, be thoroughly mixed and incubated together in the same cell, the mixed leucocytes when treated with iodine show the normal percentage of cells giving the iodine reaction. The foreign serum does not act prejudicially on the formation or the mobilization of the iodophil substance in either case. If a drop of normal blood be incubated with egg albumen the emigrated leucocytes so obtained give the reaction on treatment with saline and iodine.

Although present in the leucocytes of birds and mammals I have not detected the mauve reaction in the incubated white blood corpuscles of the frog either from the blood stream or from the dorsal lymph sac. It may be that the iodophil substance is not present in the leucocytes of cold-blooded animals.

The Iodophil Substance may be Present in Leucocytes in an Infected Area though Absent in Leucocytes drawn from the General Circulation.

In a case of cutaneous erysipelas (streptococcal infection), with marked local and general symptoms, a drop of blood drawn from a puncture in the inflamed area (unincubated) gave a well marked mauve reaction in a number of leucocytes when treated with watery iodine solution. A dried film from the same blood, also from the inflamed area, treated with iodine vapour and mounted in iodine gum, showed the characteristic mahogany-coloured (glycogen) reaction. Blood drawn from the finger of the same patient gave no mauve reaction with watery iodine, or glycogen reaction in a dry film.

The occurrence of iodophilia in the leucocytes from the infected area, while absent from the leucocytes in the general circulation, is a point of interest. It suggests that changes of a defensive kind occur in leucocytes while circulating in an infected area, but that after the corpuscles leave this area and return to the general circulation they revert to the normal condition, and cease to show the iodophil change unless the general toxæmia has been too profound. In connexion with this point, however, it is necessary to remember that the leucocytes which give the reaction may have already emigrated from the capillaries into the tissue spaces and lymph channels before mingling with the blood which escapes from the puncture.

The Association between the Iodine Reaction and Infection.

I have recently had an opportunity of observing the effect of a sharp attack of (streptococcal) throat affection on the amount of iodophil substance in my own leucocytes. Having from frequent observation for some weeks ascertained both the percentage of leucocytes which gave the mauve reaction and the amount of iodophil substance poured out in incubated films of my own blood in health, I was in a position to compare these results with the results obtained from incubated blood films taken during the height of the throat infection. (Fig. 5.) Wet films

* Possibly if incubated in blood plasma cancer cells may exhibit pigment ingestive capacity.

of incubated leucocytes treated with watery iodine solution showed, during the febrile stage, a considerable increase in the number of cells giving the reaction and in the amount of iodophil substance exuded. Films of the same blood incubated, dried, and stained with iodine vapour and mounted in iodine gum showed an abnormal amount of intracellular and extracellular mahogany coloured exudation. (Fig. 6.) Unincubated dried films of the same blood treated in the same way appeared normal. This increased iodine reaction lasted for nearly a fortnight after the temperature had fallen to normal. This observation shows the intimate association between the circulation of bacillary toxins and the occurrence of iodophilia in the leucocytes. It also shows the phases of increased formation of iodophil substance by the phagocytes—first the increase in the extracellular soluble mauve-coloured exudation, then the occurrence of the less soluble intracellular mahogany-coloured deposit. Both these occur before any corresponding change can be detected in the leucocytes in the general blood stream, and they are still present in the incubated leucocytes for some time after the constitutional reaction to the infection has disappeared. This shows the close association which exists between leucocytic activity in response to infection and the formation of an iodophil substance by the phagocytes. A still later stage of this same condition has already been described by other observers in the leucocytes in various septic conditions.

Time alone can show the real significance of the occurrence of iodophilia in the leucocytes in health, and the part played by this iodophil substance in the process of immunization against bacterial, and possibly other toxic substances. It is, however, evident that the problem must be attacked from the chemical side before the metabolic changes in the leucocytes and other cells which lead to the elaboration of this iodophil substance can be fully understood, or estimated at their true value.

I am hopeful that the routine examination of the cells of various kinds of malignant growths at various stages of their development for the presence of iodophil substances, especially undertaken in connexion with the existence or absence of like changes in the leucocytes, may tend to throw light on some obscure points in the metabolism of the cancer cell.

REFERENCES.

¹ *Lancet*, December 12th, 1908. ² *BRITISH MEDICAL JOURNAL*, June 3rd, 1916, p. 777. ³ Quoted by Burnham, *Haemocytes and Haemic Infections*.

Lectures

ON

DISEASES OF THE MALE URETHRA.

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LECTURE IV.—TREATMENT (*Continued*).

GENERAL CONSIDERATIONS, WARNINGS, AND INSTRUCTIONS.

It is advisable to have at hand a small printed card that will fit the waistcoat pocket. On this card should be printed the following instructions.

A. General Warnings.

1. Please remember that until the doctor passes you as "cured" you are infectious to a woman. This is the fact even though you yourself see no sign of urethral discharge. You will think you are cured for a long time before you are really cured, that is to say free from infectious germs.

2. Be careful not to convey discharge on the fingers to the eyes. If you do so you may set up dangerous inflammation and might even lose your sight. If the eyes become inflamed return to the doctor at once for examination.

It is wise to buy a small bottle of lysol or listerine from the chemist and to use a teaspoonful of this in a basin of water wherewith to wash the hands after handling the parts in urinating or injecting.

3. Be careful not to use towels which other persons, especially children, are likely to use. Children may contract the disease from infected towels.

4. If you are using a common bath, try to use it after everyone else has finished. Always pass water before taking a bath. In any case add four teaspoonfuls of lysol or listerine to your bath, and wash your face before you enter the bath. Swill out the bath with fresh water after use.

B. Directions as to Mode of Life.

1. You must not drink a drop of alcoholic liquor (beer, wine, or spirits) until the doctor gives you permission.

2. You must refrain entirely from any kind of sexual excitement.

3. You should not ride a horse, bicycle, or motor bicycle.

4. As regards diet, you must avoid all things that sting or burn the tongue, such as curry, ginger, pickles, vinegar, horse-radish, mustard, pepper. Meat will not do you any harm. Do not starve yourself. You can fight the disease better if you eat plenty. Your appetite is the best guide.

5. As regards drink, take plenty of fluid, especially plain water, milk, and soda, tea, cocoa, lime juice, lemonade, barley water, and the ordinary mineral waters. Do not take any ginger beer or ginger ale, and coffee is best avoided.

6. Smoking is not harmful.

7. During the first three weeks of your trouble the best results can be obtained if you can lie up in bed. Usually this is not possible. If the testicles or joints swell up, or if you are feverish, then it is essential to go to bed. Anyhow, take no exercise and keep as quiet as possible. After the first month you should gradually begin to take exercise again and should try to get fit. Week-ends at the seaside will then prove of great benefit.

8. If you suffer from painful erections while in bed you will find relief if you get up and pass water.

9. It is not wise to stick cotton-wool over the end of the penis. If you wish to avoid soiling your clothes by discharge, get some lint and cut out small pieces, which you can wrap round the organ and tie on with tape or string.

10. Above all, do not worry. If you let the disease get on your mind it will depress your general health and make the disease more difficult to cure. Remember you are not the first man to get this disease, yet the world goes on all right. The disease is always curable, but the cure often takes several months.

GENERAL TREATMENT.

During the acute stage of a posterior urethritis (average five to eight weeks if the patient is up and about) there is no doubt that far quicker results are obtained if the patient can be persuaded to lie up in bed, as by that means the acute stage may be cut short to a period of three weeks. If the patient is in bed less toxin is massaged into the circulation so that the patient's resistance is not overcome by a flood of bacterial poison. The patient also avoids fatigue, and so is better fitted to resist his trouble. When in bed he is far less likely to develop complications. If a patient is sent to bed the acute posterior urethritis often dies down at the end of three weeks, making it possible to begin posterior irrigations and prostatic massage at the end of that period. Many patients are able and willing to lie up for a few weeks, and they should be encouraged to do so. Keep a temperature chart, as it will be found of great help and interest. Let the patient sit in a hot hip bath twice a day. Hot baths act as fomentations.

Drugs.

The disease is usually a local disease, and is most effectively treated by the local application of antiseptic remedies. It has been proved by control experiments that sandalwood oil does not cure the disease. All the same there is no doubt that it often diminishes the discharge and keeps it under control, and it undoubtedly relieves painful micturition. The disadvantages of sandalwood oil are, first, its great expense (one patient of mine had spent £30 on sandalwood oil before he came under my care); secondly, it is apt to upset the stomach and cause pain in the kidneys. I seldom order sandalwood oil except under two conditions: First, when there is greatly increased frequency of micturition and intense pain at the end of micturition (cystitis). Then it acts like a charm. Secondly, in hyper-acute cases, where it undoubtedly soothes the red and swollen mucous membrane of the urethra.

The best form is pure sandalwood oil suspended in tincture of quillaia or mucilage of acacia, and taken as a fluid mixture after meals in plenty of water.

If you wish to order an internal medicine, the best for routine purposes is an alkaline mixture. Potassium citrate in doses of 30 grains, given until the urine becomes alkaline, is, I believe, the best drug. There is little doubt that when cases are doing well they tend naturally to develop alkalinity of the urine which, when passed, may be milky with phosphates. (The milkiness dissolves at once on addition of acetic acid to the urine.) Evidently the gonococcus living in its natural habitat, the human urethra, does not like an alkaline urine. This is why I believe in producing an artificial alkalinity by means of potassium citrate. It is an erroneous notion, widely held, that if the

urine is allowed to be alkaline, then there is an increased risk of cystitis. I am convinced, from practical observation of patients, that this is not the case.

Particularly harmful is the exhibition of hexamethylene tetramine. It does not exercise any bactericidal influence on gonococci in the living urethra, and often produces painful micturition when urethritis is present. Formalin in the urine is very irritating to the inflamed mucous membrane.

It is important to keep the bowels well moved by suitable laxatives. Magnesium salts seem to be particularly helpful as laxatives in this disease.

In chronic cases alkalis are not so useful. In these the indication is to increase the general resistance of the body by every possible means. Send the patient to the seaside for two or three weeks, get him to take outdoor exercise, and live amidst cheerful surroundings in the fresh air as much as possible, and let him feed up and get fit. Tonics are now required, such as iron, quinine, strychnine, and arsenic. Above all, keep the patient from brooding over his complaint. Cheer him up. Encourage him to think he is going to get well. Let him realize that you at least have no doubt that he is going to get well. Patients with chronic gonorrhoea tend to be most depressing individuals, and much virtue must go out of the physician who would cheer them up and help them.

TYPE CASES.

I am now about to enter upon the most difficult part of my task. I have described to you the surgical anatomy of the urethra, the clinical pathology of urethritis, methods of accurate diagnosis, and methods and instruments employed in scientific clinical treatment. I shall now endeavour to put into words an account of the different types of cases that will come to you clinically. It is easy enough to take an individual case and demonstrate upon it the diagnosis and treatment suited to that case. It is far more difficult to describe type cases and lay down lines of examination and treatment. Nevertheless, the task must be attempted, as it is necessary to give you a basis on which to found your own experience and practice. Take what I say as a guide to help you. Adapt it as your own intelligence and knowledge serve to the actual patients who come to you in practice. Above all, I do not want to discourage you from trying new methods of treatment. But before trying the new methods I want you to master, first, the accurate diagnosis of the disease, and, secondly, the average results you can obtain by the methods I describe, which I have tried and found satisfactory. You will then have a basis of knowledge of what can be done, and will be able to determine if you are getting better results by your new methods.

Examination.

A case of acute urethritis, duration some days or weeks, with profuse yellow discharge exuding from the meatus. Diagnosis: Either acute anterior urethritis or acute anterior and posterior urethritis.

History.—Note how and when contracted, length of incubation period, previous treatment if any, how many previous attacks, pain, frequency of micturition.

Physical Examination.—Place the patient on a couch, take a film of the discharge, stain, and examine under the microscope for pus cells and gonococci.

Place a pot between the patient's legs and have a large urine glass and a sink handy. Wash out the anterior urethra with mercury oxycyanide 1 in 4,000 until the washings come away quite clear of pus and threads, as tested by pouring them into the urine glass. Now ask the patient to rise and pass water into the urine glass. If the urine is clear the diagnosis is acute anterior urethritis. If the urine is hazy with pus the diagnosis is acute posterior urethritis. (Cystitis as well, if there is greatly increased frequency of micturition and pain at the end of micturition.)

Note, however, that the haze may not be a haze of pus. Determine this question as follows: The haze may be—

1. *Phosphates.*—These disappear on the addition of acetic acid.

2. *Pus.*—A ropiness on the addition of potassium hydrate indicates pus. If in doubt place a drop of urine on a slide, make a film, dry, stain, and examine under the microscope. Pus cells can then be seen.

3. *Bacilluria*.—Place a drop of urine on a slide, dry, fix, stain, and examine under the microscope. Nothing is seen but bacteria.

4. *Sandalwood Oil*.—The patient is taking sandalwood oil. Place a drop of urine under the microscope. Nothing is seen but fat droplets. If in doubt, stop the sandalwood oil and examine again the next day.

5. *Urates*.—The haze disappears on the addition of potassium hydrate. Warm the urine; the haze disappears.

6. *Oxalates* (very rare).—Place a drop under the microscope. Typical crystals are seen.

What is the real object of this examination? It is not meant to determine whether anterior irrigations or anterior injections should be used. These should be used in any case. It is meant for *prognosis*. If the disease is confined to the anterior urethra, the case should get well under treatment in three or four weeks, and possibly in a week. Encourage the patient by telling him this, but make no rash promises. If the disease has spread to the posterior urethra, the disease can hardly get well in under three months. Tell the patient this from the start, so as not to encourage false hopes, and explain the reasons to him. Encourage him if possible to lie up. (It is true that a few exceptions will be met where the posterior urethra clears itself in a week or ten days, and the disease never spreads to the prostate. These cases are lucky exceptions.)

Short Examination if Little Time is Available.

Inspect the meatus, and note if the urethritis is very acute or only mild. This will guide you as to strength of injection or irrigation to order—potassium permanganate 1 in 4,000 for acute cases, up to 1 in 2,000 for mild cases.

Ask the patient to pass water into two glasses. If the second is clear, the chances are that the disease has not spread to the deep urethra (proof not absolute). Note this. Then give the patient the printed directions and order a suitable injection or irrigation. Tell him to call in a week or ten days, when you can arrange sufficient time to carry out the more complete test described above.

Treatment.

Give the patient his printed directions, and if the disease has spread to the deep urethra, try and persuade him to lie up. Whatever the state of the disease, whether anterior or posterior, employ anterior irrigations from the very outset. Do not employ posterior irrigations in the acute stage—five to eight weeks in ambulatory cases, three weeks in cases that lie up. The best results are obtained if the doctor himself can irrigate the anterior urethra once a day. Irrigate from a low height (3 to 4 ft.) with the utmost gentleness in ballooning the canal, and suit the strength of the fluid to the severity of the inflammation. In average cases start with 1 in 3,000 potassium permanganate, and as the discharge and pain diminish increase the strength by 1 in 500 until you have reached 1 in 2,000, or even 1 in 1,500. If the discharge and pain diminish, you are doing right; if they increase, you are either using the washes too weak or you should carry out irrigations twice a day. In the majority of cases once a day is sufficient.

ACUTE ANTERIOR URETHRITIS.

In mild anterior cases I often start with 1 in 2,000 potassium permanganate and work up to 1 in 1,500, or even 1 in 1,000, by the fourth or fifth day. Often by the fifth or sixth day there is no discharge and the urine is clear. I then use the urethroscope and look for infected glands of Littre. If not present, the patient is cured; if present, I cure them with the operating urethroscope, and continue irrigations for another five or six days. At the end of that time I use the urethroscope again. If no diseased follicles are seen, cure is complete. Such quick cures can only be obtained in patients who have had the discharge a few days and in whom the disease is not very acute when first seen. I have dozens of such quick cures in my records—that is to say, five to seven day cures in non-follicle cases on washings alone, ten to twenty day cures in cases with infected follicles. Having treated the follicles you must continue with daily irrigations for five to seven days before it is advisable to use the urethroscope again and see if all the follicles have been destroyed; if not, you must operate again, and again irrigate daily for a week and then inspect again.

In the more acute later anterior cases it often takes a fortnight, or even a little longer, of regular daily irrigations or injections to stop all discharge and get the urine quite clear. When that is attained you should proceed to urethroscopy, as described above, to eliminate infected follicles.

If the patient has acute anterior urethritis but cannot come to you for irrigations, then instruct him how to irrigate or inject for himself. Let him irrigate once or twice a day and inject at least twice—and, better, three or four times—a day. Let him report in a fortnight or three weeks for further examination. Many such cases will then be found cured. All such cases, if free from discharge at the second visit, should be urethroscopied. In this way you can detect infected follicles and destroy them if present.

Early Urethroscopy.

The object of early urethroscopy is to answer the question whether these patients, who are discharge-free, are fully cured, or have they the gonococci still lurking in a side track in the anterior urethra. These side tracks are of two kinds:

1. Usually they are found to be infected and swollen glands of Littre. Destroy these with the operating urethroscope, and ask the patient to inject for a week and then report. Urethroscope again. If all the glands are healthy the patient is cured. Often at the second examination there can still be seen a few remaining infected glands; destroy them. Let the patient irrigate or inject for another week and then report. Urethroscope again. In most cases there are no more infected glands to be seen; the cure is complete. Time of cure, two to four weeks.

2. Less often a portion of the canal is seen to be red, swollen, and oedematous, and not to dilate properly under air distension. This is a submucous infiltration or a soft stricture. Treat this by means of Kollmann's dilators applied every fifth day until the normal calibre of the canal has been restored, and the canal can be seen by the urethroscope to be healthy. All this time the patient continues his irrigations or injections. Time of cure, three to five weeks.

ACUTE POSTERIOR CASES.

If, however, you find by your first examination that the disease has already spread to the deep urethra, you will do no good by irrigating the case yourself as you are not going to get an early cure. In such cases instruct the patient how to irrigate or inject for himself, and tell him to use 1 in 4,000 potassium permanganate if the disease is acute, 1 in 3,000 potassium permanganate if mild, and to irrigate twice, or inject four times a day. On no account irrigate the deep urethra at this stage, as it does no good and leads to complications. The object in irrigating or injecting the anterior urethra in early acute posterior cases is to keep down the discharge in the anterior urethra, and prepare for the time when you will be able to irrigate the deep urethra—five to eight weeks in ambulatory cases. It is more pleasant for the patient to be comparatively free of discharge, and you are saving time by getting the anterior urethra into a healthy state. At the end of some weeks the case will enter on the subacute stage.

TREATMENT OF A SUBACUTE CASE.

The patient has had an acute posterior urethritis. Towards the end of some weeks (three weeks if the patient has gone to bed, five to eight weeks if he has remained at work) the severity of the disease begins to die down in the course of nature; that is to say, the discharge lessens and becomes thinner. Pain, burning, and chordee cease, fever disappears, and the patient begins to feel better in himself. Take the case of a patient who has had acute posterior urethritis for some five to eight weeks from the date of the infecting coitus. If he has been under your care at an earlier date he will have been irrigating his anterior urethra regularly, and there will be little if any urethral discharge to be seen. Ask him to pass water into two glasses. The first is certain to contain a fair haze, the second may be hazy with pus, or it may be clear. Now is the time to institute treatment for the deep urethra, but begin with the utmost gentleness, and use weak solutions of your antiseptic wash. At the commencement posterior irrigations should only be carried out by the doctor. Irrigate the deep urethra every day for a week or ten days, or

in the case of out-patients two or three times a week. For the first two or three sittings anaesthetize the urethra with a little 4 per cent. stovaine solution. Then irrigate the deep urethra with 1 in 5,000 potassium permanganate from a height of not more than five feet. Increase the strength each day by 1 in 500 until a strength of 1 in 2,000 has been reached. Most patients will stand 1 in 2,000 after a short time, and their urinary haze will not disappear until this strength has been attained. Some patients' urethras are, however, very sensitive, and will not tolerate concentrations greater than 1 in 3,000. In such cases perseverance at such a strength will remove the purulent haze. Above all, beware of causing intense pain and strangury by your irrigations. If you are doing so you are using too great strengths, or you have begun to irrigate too soon. Another warning is necessary: Do not keep passing several lots of wash into the bladder. Such a proceeding will irritate the bladder. Be content at first if you can only persuade an ounce or two into the bladder. Very soon the bladder will learn to take half a pint quite easily. Flush out the bladder once only, and then let the patient pass the wash out. Use the rest of the wash for irrigating the anterior urethra. Above all, the wash is to be persuaded into the bladder—not forced in by excessive pressure.

During this period of treatment massage the prostate very gently every third day for twelve days. Later on you ought to lengthen the intervals of prostate massage to every fifth or seventh day. Do not try to effect too much at each massage. Do not massage for more than one to two minutes, and let the process be one of peaceful persuasion or gentle stroking. Do not use powerful squeezings. I cannot warn you too carefully on this point.

If you content yourself with posterior irrigation and prostatic massage for a period of twelve to fourteen days you will find at the end of that time in the majority of cases that all purulent haze has disappeared from the urine, and that the urine has become clear, and at most contains a few purulent threads. In other words, the case has entered upon the chronic stage.

TREATMENT OF A CASE OF URETHRITIS IN THE CHRONIC STAGE.

The patient now thinks he is cured. His urine contains a few threads, and there is noticed a little sticking of the meatus, and a slight gleet discharge in the early morning. Warn your patient that it will be at least three to six weeks before he is really cured.

Ask the patient to pass water, and then massage the prostate and examine the discharge under the microscope. Make a rough note of the number of pus cells, large, medium, or minimum. Repeat this examination every two or three weeks, and by this means you can best judge the progress of the case towards cure.

As regards the treatment of the chronic posterior urethritis, you should now discontinue daily irrigations in order to test if the urine will remain clear without such treatment. In most cases, if the patient is keeping the rules, the urine will remain clear, provided you treat the patient every fourth or fifth day yourself. Only three rules of life are now necessary—no alcohol, no sexual excitement, no riding or bicycling. These are the three prostatic sins. The rules as to diet still hold, but encourage the patient to take exercise, feed up, and get fit. Help him to get his mind off his urethra, and let him go to the seaside at the week ends. Every fourth or fifth day let the patient attend for treatment. Massage the prostate, and instil the deep urethra by means of the Ultzmann syringe with strong solutions of silver nitrate, beginning with five grains to the ounce and working up to twenty grains to the ounce. If these cause undue discomfort let the patient go home and sit in a hot bath. Some patients cannot stand such strong treatment. If so, be content with giving, after the massage, a posterior irrigation of 1 in 5,000 silver nitrate. At the end of five or six weeks the prostatic fluid will probably be found free of pus and the posterior urethra is cured.

In cases of chronic vesiculitis, instead of using these instillations, proceed every fifth day as follows: Fill up the bladder with 1 in 5,000 silver nitrate solution, pass a No. 24 Charrière metal bougie. Leave this in for five minutes. Remove the bougie, turn the patient over and

massage the vesicle gently but firmly and thoroughly. Let the patient then pass out the irrigating fluid. It will be found to be full of purulent sperm, or even of casts of the vesicles. An infected vesicle, possessing, as it does, a thick fibrous wall and a very small duct opening, needs much firmer massage for its cure than does an infected prostate. For this reason vesicle cases often take four or five months for their cure, and are the most resistant cases of all. Cure is a question of obtaining proper drainage and emptying of the infected vesicle. Cases only do well when the vesicles can be got to empty themselves properly. In such circumstances drainage probably does not take place through the ducts. The ducts become digested by the pus, and a large pathological opening, as of a burst abscess, is formed leading from the vesicle into one side of the posterior urethra. You can see such openings if you use the posterior urethroscope, and can actually see pus issuing from them if you squeeze the vesicle at the same time with a rectal finger. That is the object you have in view in passing the metal bougie. The bougie helps in the formation of a proper opening for drainage. You can detect when you are dealing with a vesicle case by means of tactile rectal diagnosis. The thickened wall of the distended vesicle can be clearly felt in this manner. Give a guarded prognosis in such cases. In some of these cases the purulent haze in the urine is most persistent and lasts for weeks before it yields to massage and irrigations.

The case often begins to do well after the patient has experienced a series of nocturnal seminal emissions, the emitted fluid being found to be greenish-yellow, or even blood-stained. This is a sign that the abscess has burst into the deep urethra. Failing the formation of such an opening, the duct of the vesicle sometimes gets blocked altogether, and may remain blocked for months or even years at a time. The urine then gets quite clear, and the patient thinks he is cured. He may go months, or even years, without a relapse of yellow discharge, yet sooner or later excessive indulgence in alcohol or coitus, or depression of the general health, may lead to the bursting forth of the vesicular secretion afresh, and a sudden apparently inexplicable appearance of profuse yellow urethral discharge. These facts I have just mentioned will account for those curious cases we see where a man suddenly develops urethritis when he has not been with a woman for a long time. Such a phenomenon sometimes occurs in married men whose wives remain perfectly healthy.

Resistant vesicle cases, if persistence in treatment after three or four months does not result in cure, should be submitted to the operation of vasotomy, by which it is possible to wash out the infected vesicle and bring about a rapid cure.

CHRONIC ANTERIOR URETHRITIS.

During the same period, when you are carrying out the treatment of the posterior urethritis as just described, you should also employ the time in curing the anterior urethra. This can only be done by an intelligent use of the aero-urethroscope.

Once the urine is clear, therefore, lose no time; urethroscope the anterior urethra, as there may be lesions in the anterior urethra which need attention. If these consist of infected follicles, destroy them once a week with silver nitrate fused on to the operating probe.

If, on the other hand, these consist of submucous infiltrations (soft strictures), fill up the bladder with silver nitrate 1 in 5,000, and pass metal bougies of suitable size until you can pass a No. 24 Charrière with ease. Now begin to use Kollmann's dilators every fifth or seventh day—the straight Kollmann for a stricture in the penile urethra, the curved Kollmann for a stricture in the bulbous urethra. Use as an irrigating fluid either silver nitrate 1 in 5,000, or, if this stings too much, use oxycyanide of mercury 1 in 4,000. Increase a millimetre or two at a time until you have attained a No. 45 Charrière in the bulb, Nos. 30 to 35 in the penile. If a soft stricture is present you cannot obtain a cure of the gonorrhoea without these instruments, and at the same time you will be saving the patient from developing a fibrous stricture in later years. Control the dilatations by periodical urethroscopy.

NOTE ON THE TREATMENT OF STRICTURES.

A Stricture can only be Diagnosed by using the Urethroscope.

By this instrument you can see and judge how small or how large the opening is, and the nature of the stricture.

whether soft or fibrous. (A) If fibrous and almost pin-point, start dilatation with gum-elastic bougies. The first time you will probably get in 1, 2, 3, 4 Charrière, the next time 4, 5, 6, 7, the next time 7, 8, 9, 10, the next time 10, 11, 12, 13, 14, the next time 14, 15, 16, the next time 16, 17, 18 Charrière.

When up to 18 Charrière proceed with your nickel bougies and work up on these till the meatus (24 to 28 Charrière) will not let you use them any more. Then start with the Kollmann's dilators. If the stricture is in the bulb, work up with these to 45 Charrière; if in the penile, work up to 30 or 35 Charrière. Then tell the patient to come back for urethrosopic inspection in six months' time. In the large majority of cases cure will be found to be permanent if dilatation has been carried out to these high degrees. (B) If you find a tunnel stricture that you can feel from the outside, or if you find that the stricture will not dilate up any more than to 8 or 9 Charrière, then take the patient into the hospital for internal urethrotomy. In actual practice only a few cases will require this operation.

There is no mortality from dilatation, but the mortality of internal urethrotomy may be as high as 4 to 5 per cent. When the patient comes out after an internal urethrotomy, go on dilating with nickel bougies and then with the Kollmann's dilators as above.

The Routine for Passing Bougies.

The patient passes water. Fill up the bladder with oxycyanide of mercury solution 1 in 4,000 or silver nitrate solution 1 in 5,000 by Janet's method from a height; lubricate and pass the bougies. The patient then rises and passes out his irrigating fluid.

After the passage of bougies and Kollmann's dilators warn the patient—

1. That he may bleed a little for twenty-four hours.
2. That he may have urethral discharge for twenty-four hours.
3. That it will hurt him to pass water for twenty-four hours.

Warnings.

Never forget that the object of dilatations of all kinds is not to tear the stricture or tear the urethra, but to tire out the stricture as rubber is tired. You will find that absorption of the stricture goes on between the treatments by phagocytosis on the part of the tissues. If you tear, this process does not go on, but the stricture becomes more resistant. Never dilate more than twice a week, and usually once a week or once in ten days is sufficient.

SALVARSAN TREATMENT OF SYPHILIS:

AN ANALYSIS OF TWO HUNDRED CASES.

BY

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AND

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BETWEEN May 22nd, 1916, and September 24th, 1916, we have treated at hospital 200 cases of primary and secondary syphilis by intravenous injections of salvarsan and intramuscular injections of mercury, and in view of the probability of this treatment being extensively employed by members of the medical profession in many centres, we think that our results and experiences may be of use.

The method we have employed is that laid down by the War Office. It is divisible into three parts:

- A. Comprised of first to eighth week: Eight doses of 1 gram of mercury; 2.8 grams of salvarsan. Time occupied, fifty-two days.
- B. Fourteen days' potassium iodide.
- C. Comprised of eleventh to thirteenth week: Three doses of mercury; 1.2 grams of salvarsan. Time occupied, fifteen days.

The full course of treatment is as follows, in accordance with instructions contained in War Office letter dated May 8th, 1916, No. 24 General 4912. (A.M.D.2.)

COURSE A.

First Week:
2 doses salvarsan (0.3 gram);
1 dose mercury.

Second Week:
1 dose salvarsan (0.3 gram);
1 dose mercury.

Third Week:
1 dose mercury.

Fourth Week:
1 dose salvarsan (0.4 gram);
1 dose mercury.

Fifth Week:
1 dose salvarsan (0.5 gram);
1 dose mercury.

Sixth Week:
1 dose salvarsan (0.5 gram);
1 dose mercury.

Seventh Week:
1 dose salvarsan (0.5 gram);
2 doses mercury.

The above course of treatment, as will be seen later, is not given to all patients, as B and C are merely extensions of Course A, and in a large percentage of cases we have found that the desired results—that is, a negative "Wassermann" reaction and absence of all clinical signs and symptoms—have been obtained by the end of Course A. If the "Wassermann" reaction is still positive at the end of Course A, potassium iodide in 10 grain doses, three times a day for fourteen days, is then prescribed. If still positive, Course C is given.

The Cases Treated.

Practically all the cases from which these results have been obtained were conclusively shown to be syphilis by (a) the "Wassermann" reaction being positive, or (b) the presence of *Spirochaeta pallida* in either primary sore or secondary rash.

None were treated on a purely clinical diagnosis, unless the signs put the diagnosis beyond all doubt.

The Results Obtained.

The 200 cases were composed of 125 primary and 75 secondary; not picked cases, but the first 200 treated with the course.

At the end of Course A, of the 125 primary cases, 16, or 12 per cent., still showed a positive "Wassermann" reaction, and 109, or 87 per cent., showed a negative "Wassermann" reaction. Of the 75 secondary cases, 43, or 57 per cent., still showed a positive, and 32, or 43 per cent., a negative "Wassermann" reaction.

Of the 43 secondary cases showing a positive reaction at this point, 16 ceased treatment for the following reasons: 11 were showing signs of marked stomatitis, having had large quantities of mercury before this course, 3 had marked albuminuria, 1 refused more treatment, and in 1 the treatment was stopped owing to the violence of the reaction.

At the end of Course B (potassium iodide) the following results were obtained:

Of the 16 primary cases with a positive reaction, 6, or 38 per cent., still showed a positive, and 10, or 62 per cent., showed a negative "Wassermann" reaction; 2 of these 6 cases ceased treatment owing to stomatitis.

Of the 27 secondary cases with a positive reaction, 16, or 59.3 per cent., still showed a positive, and 11, or 40.7 per cent., showed a negative "Wassermann" reaction.

At the end of Course C (further treatment with 1.2 grams salvarsan and 3 grams mercury) the following results were obtained:

All the primary cases, which numbered 4, showed negative reactions, and of the 16 secondary cases 10, or 62.5 per cent., were still positive, and 6, or 37.5 per cent., were negative.

Of the 200 cases which started treatment, 182 completed the full course where necessary. Of these, 172 had negative "Wassermann" reactions—namely, 123 primary, or 98.4 per cent. of those starting, or 100 per cent. of those completing the full course, and 49 secondary, or 65.3 per cent. of those starting, or 81 per cent. of those who completed the full course.

As would be expected, the primary stage shows a much higher percentage of negative "Wassermann" reactions after treatment than the secondary stage. We think it probable that a certain number of the secondary cases may show a negative reaction in a short time, as the final blood tests were taken directly the course had finished.

The Reactions.

The reactions shown by the patients under treatment with salvarsan twenty-four hours after having had the injection may be grouped under three headings: 1, Mild;