phagocytosis? In this instance also the corpuscles were kept sterile and fresh serum used in every case. (Table 7.)

TABLE 7.

Age.	Phagocytic index.	Percent. of phagocytizing cells.
Fresh corpuscles	1.09	45
Twenty-four hours old.....	0.61	29
Two days old	0.30	18
Four days old	0.09	8

The results show that only fresh corpuscles can be used in opsonic work, and my experience has been that after six hours many of the cells are dead and that fallacious results are obtained if such cells are used.

9. How many cells must be counted in order to obtain a satisfactory result? Emulsions of various strengths were prepared, and both the bacillary and Simon's index determined for 25, 50, 75, 100, 150, 200, 300 and 400 cells respectively. The results are shown in Table 8.

TABLE 8.

A. Emulsion of 2,000,000 cocci per c.mm.:

Cells counted.	Wright's index.	Simon's index.
25	1.00	1.26
50	0.97	1.00
75	0.96	1.00
100	1.69	1.02
150	1.16	1.12
200	1.23	1.20
300	1.18	1.11
400	1.27	1.15

B. Emulsion of 666,666 cocci per c.mm.:

Cells counted.	Wright's index.	Simon's index.
25	1.85	1.18
50	1.32	1.16
75	1.03	1.00
100	1.25	1.02
150	1.30	1.02
200	1.12	0.97
300	1.13	1.04
400	1.06	1.00

C. Emulsion of 222,222 cocci per c.mm.

Cells counted.	Wright's index.	Simon's index.
25	1.20	0.60
50	1.62	1.14
75	1.75	1.27
100	1.75	1.26
150	2.21	1.60
200	2.15	1.70
300	2.00	1.62

D. Emulsion of 74,074 cocci per c.mm.:

Cells counted.	Wright's index.	Simon's index.
25	No index.	No index.
50	0.66	1.00
75	0.50	0.82
100	0.57	0.70
150	1.14	1.26
200	1.18	1.15
300	0.95	0.96
400	1.05	1.11

The results show that with weak emulsions the chances of error are greater than with stronger emulsions, bearing in mind that with too rich emulsions counting becomes difficult, if not impossible.

In these experiments, likewise, the advantage of Simon's index is at once apparent, although with the weaker emulsions it also becomes somewhat uncertain.

In conclusion I wish to express my appreciation to Dr. Charles E. Simon, at whose suggestion the above experiments were undertaken.

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Induced Hyperemia in Treatment of Acute Infections.—

G. Fichera publishes in the *Policlinico*, xiv, 6, 1907, the results of extensive experimental and clinical research on the efficacy and the mechanism of Bier's stasis hyperemia. His article is illustrated and is accompanied by nearly 8 pages of international bibliography on the subject. His conclusions are to the effect that the hyperemia induced retards the circulation through the part, while the transudation and diapedesis impede the general invasion of the organism by the bacilli. At the same time as the medium becomes less favorable for them, they fall a prey to the migrating leucocytes as phagocytosis is exceptionally active under these conditions.

GONORRHEAL PROSTATITIS.*

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The constancy with which prostatitis occurs when gonorrhea invades the posterior urethra, and the persistent nature of that inflammation after the subjective symptoms, and the more evident of the objective symptoms, have subsided, give this condition the right to more consideration.

That a gonorrheal inflammation of the posterior urethra ever occurs without involving the prostatic ducts to a greater or less degree seems unlikely. Anatomically, there is little to invite a posterior urethritis to the exclusion of the prostate. The character of the epithelia, the scarcity of mucous glands, and the almost vertical direction of the canal, which is distended so much of the time with urine and made one with the bladder cavity, are factors against a theory that the prostatic urethra can be affected with a gonorrheal infection without the prostate participating.

Acute gonorrheal prostatitis—the division of this affection into the catarrhal, the follicular, and the parenchymatous forms—may well be accepted as expressing the clinical varieties, providing the tendency of one form to merge into another is appreciated.

CATARRHAL PROSTATITIS.

This form is by far the most frequent of the acute varieties. It is highly probable that with every posterior gonorrhea there is some involvement of the prostate and though it may extend but a short distance into the prostatic ducts and be relatively mild, it is obvious that its existence should be appreciated.

The symptoms of catarrhal prostatitis go hand in hand with the symptoms of posterior urethritis—the increased desire to urinate, the cloudiness of both portions of urine, and the characteristic small, round and comma-shaped shreds which so often appear. These filaments, when examined microscopically, are usually small plugs or casts made up of mucus, pus cells, cuboidal and cylindrical epithelia, and gonococci. The prostatic origin of these shreds is not difficult to prove. If after a portion of the urine is voided light digital pressure is made on the prostate, the shreds are squeezed into the urethra and carried out with the urine which is then passed.

The danger of manipulating the prostate during an acute inflammation of that organ is ever to be borne in mind on account of its tendency to produce not only an acute epididymitis but an extension of the prostatic involvement as well. The clearing up of the acute posterior urethritis is, I believe, seldom accompanied with a resolution of the catarrhal prostatitis. Its tendency is to go on to a chronic condition.

The diagnosis must usually be made by the urine, as examination of the gland by the rectum frequently fails to show any change in size or consistence or give any areas of tenderness.

FOLLICULAR PROSTATITIS.

This may be an extension of the catarrhal form or it may follow directly the onset of an acute urethritis posterior. The process of inflammation extends in a selective way along certain ducts toward the periphery of the gland, and usually in its upper part, there to establish, by purulent or cystic distension of the alveoli, the small nodules or tender areas detected by digital exami-

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nation. The symptoms accompanying this phase of acute prostatitis are not unlike those of the previous variety—increased and usually painful urination, the pain intensified at the close of the act; both urines cloudy; and the comma-shaped shreds, which are seldom absent.

Follicular prostatitis, like the catarrhal, tends to become chronic. The treatment during the acute stage consists in the treatment of the urethritis, by the avoidance of bodily exercise, by the avoidance of local manipulation of the prostate, and by the avoidance of constipation, and the institution of such measures as will tend to reduce the existing congestion and inflammation.

PARENCHYMATOUS PROSTATITIS.

In its milder forms this is clinically identified by the hyperemia or congestion of the entire gland. By the rectum the prostate is felt to be evenly swollen and smooth, and its consistence is elastic or edematous, though, from time to time, only one of the lateral lobes is found thus affected.

Although the organ is distinctly sensitive to pressure there is no sharp pain, but the patient experiences a sense of fullness in the perineum. Urination is made more difficult and painful and defecation is attended with pain and discomfort. There is no fever. The condition under appropriate treatment may subside in a few days and all subjective symptoms disappear or it may go on to chronic prostatitis or take on the progressive course which we recognize as the severer form of parenchymatous prostatitis, and which at times ends in abscess formation. Here we find a patient suffering with a painful sense of pressure and swelling in the perineum and rectum. Micturition usually becomes difficult and painful, though in some cases this is absent, while in other cases there is complete retention. Pain may radiate to the glans penis, to the thighs or across the back. Defecation may be very painful and erections and pollutions distressing. Fever may be present and accompanied by chills, though Casper had 21 cases which went on to prostatic abscess, and among them only four had a rise of temperature. On palpation the neighboring parts are found extremely sensitive, while the rectal examination of the prostate is exquisitely painful.

The gland is found swollen to twice or four times its normal size. It feels hot and is hard and tense, being sharply defined against the surrounding softer structures. Its surface is smooth, seldom irregular and one side only may be affected.

Notwithstanding the severity of the process, it may not go on to abscess formation, but, in from one to two weeks, the symptoms may subside and resolution take place. This, fortunately, occurs in the larger proportion of cases, which then go on to a chronic condition.

When suppuration does occur, the clinical picture usually becomes intensified. The pain on urination is increased, ischuria is common and the prostate becomes a pulsating and painful tumor. Rectal tenesmus is constant. The temperature rises, the tongue becomes dry, thirst is intense and the appetite gone; headache and backache ensue. Thrombosis of the periprostatic venous plexus, or in the prostatic veins themselves, may take place and go on to a typical occurrence of pyemia. It is usually not difficult to detect suppuration in the inflamed prostate.

Surgical interference is at this moment demanded. If it is delayed, the abscess usually empties itself, and most commonly into the urethra. The urine then be-

comes loaded with the products of suppuration, and the fever, the dysuria and the rectal tenesmus rapidly subside. It may be that the evacuation of pus is incomplete, and in this instance the disappearance of symptoms is delayed and the process may proceed to a chronic condition. Complications, such as infiltration of urine, gangrene, chronic septicemia, or fistula, at times ensue.

Next in frequency to the urethra as an exit for the pus, come the rectum and the perineum in the order given. In Segond's collection of 102 cases, perforation occurred 64 times into the urethra, 43 times into the rectum, 15 times into the perineum, 8 times into the ischio-rectal space, 3 times in the inguinal region, twice through the obturator foramen and once each through the navel, through the ischiatic foramen, at the border of a false rib, into the abdominal cavity and into the space of Retzius. The after-results of prostatic abscess may be chronic suppuration, neurasthenia, impotentia generandi, stricture of the rectum, etc. It is to be borne in mind that besides the complications which not infrequently attend suppurative prostatitis the mortality is considerable. In the 102 cases of Segond's referred to above, there was a 34 per cent. death rate. This is, however, considered very much too high according to other observers.

The treatment of these severer forms of parenchymatous prostatitis is both general and local. The patient should be put to bed, a light diet given and the lower bowel kept empty. Urinary antiseptics should be given and warm applications or sitz baths prescribed. Early in the process the direct application of cold to the prostate by means of one of the instruments designed for that purpose is often apparently of great benefit. The severer pain and dysuria must be controlled by opium or its alkaloids. A complete retention of urine demands catheterization. With the breaking down of the process into abscess formation comes the necessity for surgical relief.

CHRONIC PROSTATITIS.

This condition assumes a degree of importance which the acute varieties cannot approach. On the score of infectiousness acute prostatitis is little to be feared, as the active and painful nature of the condition renders the individual practically incapable of sexual intercourse. On the other hand, chronic prostatitis, which is so often wholly devoid of subjective symptoms, is probably a fertile source of the infection of women. In this connection it is to be especially noted that the great majority if not all of the acute inflammations of the prostate pass on to a chronic condition.

To divide chronic prostatitis, of which the chief etiologic factor is the gonococcus, into pathological and clinical varieties is of little moment. Clinically, the disease gives little evidence that can be put down as surely characteristic of one or another variety, and pathologically we usually find, in the same prostate, changes belonging to various forms of inflammation. At the same time the fact is not to be overlooked that chronic gonorrheal prostatitis varies much in degree and in resistance to treatment.

Symptoms.—The majority of cases of chronic prostatitis run a mild course without subjective symptoms, the patients voiding perfectly clear urine. In others the symptoms are so well masked by the persistence of a urethritis that a precise diagnosis is difficult. In the remaining class, however, some of the characteristic symptoms appear: Disturbance of urination, the changes in the sexual function, abnormal sensations, referred pains,

neurasthenia, suffering from pains across the back, down the thighs or in the testicles, constipation, pain before and after defecation, headache and mental depression. With some patients frequency of micturition, which may be attended with pain, is the most prominent symptom and to this may be added the sense of not having completely emptied the bladder. With other patients the disturbances of the sexual function seems to stand out as the chief difficulty, such as absence of normal sensation at the moment of ejaculation, pain with the seminal discharge, distressing and persistent erections at night, premature ejaculations and decreasing sexual ability. It is in these individuals that we most frequently see the best marked types of sexual neurasthenia.

Some authors hold that prostaticorrhea is one of the chief symptoms of chronic prostatitis. The writer's experience coincides with those who consider prostaticorrhea as an unusual occurrence in this condition. The combination of chronic prostatitis and cystitis is by no means uncommon. In these cases the treatment of cystitis without recognition of the prostatitis, and attention to it, proves very disappointing.

All cases of persistent urethral discharge or a persistent morning drop or those cases with a chronic and constantly recurring discharge, should be suspected and examined for prostatitis.

Diagnosis.—Although the subjective symptoms give a valuable clue to the condition, an exact diagnosis cannot be made without digital exploration of the prostate by the rectum and what is more important, microscopic examination of the expressed prostatic secretion.

A knowledge of how the normal gland should feel in the different periods of life is essential to the appreciation of size, configuration, consistence and sensitiveness of the diseased organ. The changes in prostatitis noted by palpation are many. The gland is usually larger than normal, although this is by no means always the case, for in some instances it is found markedly atrophic. Frequently one lateral lobe only is affected, or the organ may be very irregular in outline and feel as though it were made up of many lobes. Nodulation may be abundant or there may be but one or two nodes and these may vary in size, consistence and location, but they are usually about the size of a pea, hard, and situated nearer the upper part of the gland. The general enlargement of the prostate which results from a parenchymatous prostatitis usually gives an edematous feel to the organ, having lost its normal firm and elastic consistence, it becomes, as some authors put it, flabby, this varying much in degree.

The condition following the follicular form is varied. The gland, as a rule, is not so large as in the postparenchymatous condition, but is usually harder, while here and there distinctly soft spots may be felt and the nodules are few or many, localized or scattered, as the case may be. Where there has been suppuration with escape of the pus, involving the whole gland, or one lateral lobe, or as in the follicular variety, small areas, the characteristic changes of contraction and firm cicatrices result and give that sense to the examining finger. In other cases there is no change in the prostate that can be appreciated by digital exploration, and no degree of sensitiveness; in these cases the diagnosis depends alone on the study of the prostatic fluid. Pain on palpation of the prostate is generally a sign of disease, but by no means always, and painful areas are not infrequently found in prostates otherwise negative to the digital touch.

The secretion which is collected at the external urinary meatus upon digital compression of the prostate, after

the urethra has been cleansed by urination or irrigation, consists normally of a thin, milky fluid, at times slightly viscid. Its specific gravity is but little higher than that of water, it is usually faintly alkaline to the litmus test, and consists microscopically of lecithin globules, varying in size and usually present in great numbers, and epithelia which are partly cuboidal and partly columnar. A few leucocytes are normally present and occasionally some red corpuscles. Hyaline bodies of considerable diameter and the so-called *corpora amylacea* are not infrequently seen.

The changes from normal which most commonly take place in the prostatic fluid are in consistence and color. It becomes thicker, often flaky and yellowish or greenish-yellow from the addition of pus. Under the microscope there are added to the field of lecithin bodies pus corpuscles in varying numbers, scattered or in clumps, depending on the extent or kind of inflammation. In like manner epithelia from the ducts and alveoli are added, and these in different stages of degeneration. Fat globules may be seen free in the field or in the epithelia or pus cells.

The *corpora amylacea* seem to be much less frequently seen in gonorrheal prostatitis. It is to be especially remembered that as long as the presence of pus cells can be demonstrated a pathologic condition exists. Gonococci may be found in the pus cells and the fact that we cannot find them is not proof of their complete disappearance.

Prognosis.—When is the danger of infecting others past? When is a chronic gonorrheal prostatitis cured? To these questions no clean cut answer can be given.

When the urine contains no more shreds or other abnormal elements, and the prostatic fluid is free from pus cells, and repeated search for gonococci with the microscope and by culture test fails, certainly we have no grounds on which to maintain that the patient is still afflicted with an infectious disease. But on the other hand, we cannot positively say that such individuals have become noninfectious.

After a few months or a year we find, in a large number of the cases, the presence of gonococci impossible of proof. Unfortunately, the mixed infection, which almost always complicates these cases, renders the task of clearing the prostatic fluid of pus cells exceedingly difficult, if not impossible. Although it has been stated that so long as pus cells remain a pathologic condition exists, yet experience has taught that these cases are by no means always infectious.

From the observation of 120 cases, von Notthafft has come to the following conclusions:

1. In the second half year after the infection there was 73 per cent. of the cases in which the gonococci could be proved to be present in the prostatic secretion. In the third half year this percentage fell to 50, in the fourth half year to 18, in the third year to 6. From the end of the third year no gonococci could be found in the prostatic secretion.

2. In the second half year there were other bacteria besides gonococci found in the prostatic secretion. In the fourth half year there were no cases in which a pure gonococcic infection could be demonstrated.

In a few patients from whom the writer made cultures the results were in accord with Notthafft's series so far as mixed infection was concerned, but in none of the writer's cases were gonococci found by either the microscope or culture, yet in five cases out of the eight, considerably over 50 per cent., the infection was less than 18 months old. In 7 out of the 8 cases there was a

growth of *Staphylococcus albus*, and in two of these there was added a growth of *Bacillus xerosis*. In one case there was no growth.

The conclusions to be drawn are that there is difficulty in proving the presence of gonococci in these older cases of chronic gonorrhoeal prostatitis, and that other organisms play an active part in the bacteriology of this affection.

Treatment.—Where a urethritis exists, either anterior or posterior, therapeutic measures designed for the cure of this condition must be instituted. For the treatment of the chronically diseased prostate, massage of that organ by the rectum, constitutes the most important element of the treatment. The bladder should be filled with some such mildly astringent antiseptic as protargol, $\frac{1}{2}$ of 1 per cent. solution. In very many cases dilatation of the prostatic urethra, either by sound or dilator, is helpful in the treatment by virtue of the internal massage and stretching it exerts, especially on the mouths of the prostatic ducts.

Digital massage, to be useful, must be done in a systematic and purposeful manner. Starting at the external upper part of the lateral lobe, the massaging finger-tip works its way toward the median line of the gland, again it is carried to the external border, immediately below the previous path of massage, and again worked toward the center. This is continued until each lateral lobe has been thoroughly gone over. Then the finger is swept over the lateral lobes downward and toward the center, emphasizing the pressure brought to bear on the median line, that the secretion may thus better be expressed into the urethra. The patient then voids the solution which has been left in the bladder, which thus washes out the urethra and comes in contact with the recently emptied prostatic ducts, which as some think, may take up some of the solution on the principle of a sponge which has been compressed and is allowed to expand while in contact with a fluid. This massage has two distinctly beneficial elements. It empties the alveoli and their ducts of the perverted secretions which have accumulated, and it stimulates a more active circulation throughout the entire gland.

Again a warning against the danger of extending the process in massaging a prostrate in which there still exists any active inflammation.

The massage which is done very gently at first, should be repeated once, twice or sometimes three times a week, depending on the necessity of the case. A few weeks' period of treatment for the milder cases up to many months of treatment for the severer cases, is required. Besides massage, such measures as electricity or heat and cold applied to the prostrate may in certain instances be helpful. Medicinal suppositories as ichthyol, have a useful place in the treatment of prostatitis.

The advancement of the patients' general condition cannot be neglected and freedom from worry or other untoward influences must be secured. Favorable progress of the prostatitis is appreciated partly by the changes in the gland felt by the rectum, but more especially by the study of the prostatic elements microscopically. Improvement in subjective symptoms is unreliable.

Although the treatment is usually long and trying, taxing the patience of the physician and his patient, yet with well directed and conscientious care on the part of the physician and earnest coöperation on the part of the patient, the latter will be freed, in the greater majority of cases, from the danger of infectiousness and other consequences of chronic gonorrhoeal prostatitis.

TRAUMATIC NEUROSIS.*

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Traumatic neurosis is a nervous disease following injury, in which there is no demonstrable structural lesion of the nervous system. The symptoms are much like those of the common functional diseases of the nervous system, and may be spoken of as traumatic hysteria or traumatic neurasthenia. Commonly, however, we find symptoms of both of these disorders in the same patient and not rarely the clinical picture may not be that of either of them.

Litigation is a frequent complication which materially affects the clinical history. It, not rarely, warps the judgment of the physician, and may doubly influence the patient, the many attendant conditions disastrously affecting his nervous system, while the money dangling over his head leads him, consciously or unconsciously, to distort his symptoms.

The following cases are typical of a common form of traumatic neurosis, and a long period of observation gives special value to their study. I append some consideration of special points of interest relating to the disease.

CASE 1.—Mrs. L., music teacher, aged 45 at time of injury, November, 1899.

History.—She was in a street car collision, a runaway car colliding with the one in which she was riding. A physician found her fifteen or thirty minutes later lying on the floor of the car, in a dazed condition, with several cuts on her face and forehead, made by broken glass. She was confined to bed for one or two months and invalided thereafter. Her chief symptoms, and those she still presented when I saw her, were of a neurasthenic type: Insomnia, restlessness, irritability, great sensitiveness, weak memory, lack of endurance, and incapacity for thought or action. In addition she was very weak on her feet, had little use of the right hand, and there was a certain immobility of the head, because its movement caused pain in the cervical spine.

Examination.—I examined the patient in February, 1901, fifteen months after the injury had been received. The examination was made at the request of her lawyer, as a suit for damages had been instituted. The marked objective symptoms were a right hemiplegia and hemianesthesia. The motor paralysis affected only the arm and leg, and not the face. The gait was characteristic of hysteria, the paralyzed limb dragging behind instead of presenting the outward sweep of ordinary hemiplegia. The sensory loss was of all qualities of sensation, touch, pain, temperature and muscular sense. In the face the anesthesia reached to the median line. On the extremities only a part was affected. On the arm the ulnar side was anesthetic, the radial was normal. On the leg the outer side was anesthetic, the inner was normal. The special senses were also affected; there was loss of taste and smell on the right side, deafness of the right ear, and amblyopia of the right eye. There was, also, anesthesia of the mucous membranes on the right side, and, still more striking, loss of the corneal, nasal and pharyngeal reflexes. For instance, strong snuff in the right nostril gave no response, while the same applied to the left caused immediate and violent sneezing. The deep reflexes, knee-jerks, as well as pupillary reactions and optic discs, were normal.

As this case was in litigation tests were made to determine the genuineness of the symptoms. That of the nasal reflexes has already been mentioned. The patient complained of great tenderness over the cervical spine and the genuineness of this symptom was proved by the considerable acceleration of the pulse, caused by pressure over the seat of tenderness. This is called the Mannkopf symptom. In the same manner one could

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