

removed; and it acts in these ways, when perfect cleansing of a wound is impracticable; while it is a perfect substitute for iodoform at an insignificant cost; and is not injured or altered by moisture, as it may be saturated with water, and being drained and dried, is found to be unaltered.

With these advantages, acetanilid should be welcomed to the outfit of all surgeons, but especially to those of the Army and Navy, this simple enumeration of its excellencies seeming certainly to demonstrate its special adaptation to the field and campaign work of the former, and similar duty in connection with landing parties and shore duty of the latter; in time of war, its application to all wounds being soothing, beneficial, avoiding the necessity of immediate, careful, antiseptic cleansing, and permitting of delay in completing the final surgical attention in most cases a delay often as necessary as desirable on shipboard, on account of the rolling of the ship or stress of weather.

## CHRONIC PROSTATITIS AFTER GONORRHEA.

### I. ITS CLINICAL PATHOLOGY—II. ITS MICROSCOPIC AND BACTERIOLOGIC ASPECTS.

Read in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY M. KROTOSZYNER, M.D., AND JOHN C. SPENCER, M.D.  
SAN FRANCISCO, CAL.

#### I.—CLINICAL PATHOLOGY.

We desire to call your attention to a new method of examination and treatment for a certain form of prostatitis, which is very often found as a sequela of a prolonged and severe posterior urethritis.

Our knowledge of the pathology of specific urethritis has increased more during the past ten or even five years than on any other subject in medical science. All our ideas upon the etiology, pathology and treatment of this affection have entirely changed through the successful bacteriologic researches of the last few years. Further, we have learned to diagnose all possible complications of gonorrhea since rare culture methods of the specific microorganisms, the gonococcus Neisser have been made on modified blood serum by Brunner and Wertheim.

The difficulty connected with the study of this microorganism has always been and is at present to ascertain the presence of gonococci in all the organs secondarily affected by the specific malady. We are still in want of an easy method of demonstrating the gonococci and differentiating them from non-infectious diplococci. But the rapid progress made by continued bacteriologic investigations upon the features of this microorganism will in the near future surely solve this question. Every physician will then be able to give a decided opinion upon the possible danger of infection after gonorrhea, just as easily as for instance in tuberculosis by finding the tubercle bacilli.

Comparing both constitutional affections—tuberculosis and gonorrhea—we are fully justified in stating that as important as it is for the patient himself and his possible cure to find the specific microorganism in tuberculosis, it is just as important to demonstrate successfully the diploë gonococcus Neisser after a prolonged chronic gonorrhea, on account of the possible danger of infection an individual might have for others. It is evident that by our present methods

of examination it is often impossible to state whether a chronic posterior urethritis has entirely died out or not. Experienced gynecologists coincide in the statement that in cases of posterior urethritis where by objective examination nothing could be found and as subjective symptoms existed the female genital apparatus was very heavily infected. It is worthy of note, that Zweifel says in his latest work upon gynecology: "This disease (or chronic urethritis) has a strictly social danger and wives and families even were then syphilitic, for it produced zoöspemia and sterility in males, and sterility and general debility in females."

You will readily coincide with me that every contribution which throws more light upon the question, at what time a chronic posterior urethritis can be considered as cured or is no longer infectious, must be gratefully received by the medical profession.

While in Europe last year, Dr. Posner, of Berlin, told me that in his opinion the infection in cases of posterior urethritis apparently cured might be produced by the secretion of the diseased prostate gland, which is pressed out at the moment of ejaculation. In an important contribution upon this subject this same author first called our attention to the fact that by examining the prostatic secretion much benefit might be derived as regards an exact diagnosis in obscure cases of posterior urethritis. Where by digital palpation of the gland and microscopic examination of its secretion a chronic inflammatory condition of this organ could be ascertained, this chronic prostatitis was in his opinion in almost all cases complicated with an insufficient action of the ejaculatory ducts, or even with chronic spermato-cystitis. The anatomic basis for Posner's suggestions was given a few years later by Finger of Vienna. In a number of cadavers where the prostatic portion of the urethra showed chronic gonorrheal affections he found the glands of the prostate the seat of periglandular as well as endoglandular infiltration. Very interesting is the fact that in a considerable percentage of cases thus examined passive pathologic conditions of the ejaculatory ducts could be found, namely, an obstruction of the ducts by an invasion of round cells. To such conditions, apparently, ejaculation is difficult or prevented.

We therefore have sufficient reason to believe that the residue of chronic gonorrhea lies here. It is evident that by the insufficient action of the ejaculatory ducts, as well as by the cardoglandular infiltration of the prostate, infectious material is retained in the deeper appendages of the posterior urethra.

Lately v. Schlen, almost simultaneously with myself has utilized the investigations of the authors above mentioned to devise a new method of examination, by which positive results may be obtained where our previous methods failed to furnish any infectious material. Let the patient urinate at first in two portions, keeping a portion of urine in his bladder. As a rule these first two portions appeared to be almost void of threads, pus, etc. Then the prostate gland is forced out from the rectum and immediately afterwards the fluid and last portion of urine is voided which was uniformly cloudy, containing abundant material of an infectious character.

In palpating the prostate of many cases suffering from chronic posterior urethritis for this purpose, I could ascertain the fact that in a large percentage this organ was rather enlarged, of unequal consist-

ence and often painful to the touch. None of these patients complained of any of those symptoms generally ascribed to a subacute or chronic form of prostatitis. I am inclined to think that this condition of the prostate must be considered as an extension of the gonorrheal infection from the posterior urethra to the prostate gland and the peri-prostatic tissue. The deeper the inflammation extends the more it loses its violent character. If these glandular organs are once infected those remedies which will readily remove the infection from the urethral canal will certainly not influence the morbid condition of these organs owing to their anatomic structure and the insufficient action of the ejaculatory ducts.

I therefore concluded, with the valuable aid of Dr. Spencer, to systematically examine our entire clinical material of cases of posterior urethritis to ascertain what rôle the prostate gland plays in the infectious process. In order to exclude possible errors in drawing conclusions from our investigations, we have at the same time examined a number of persons who never had suffered from gonorrhea. In all cases the prostatic secretion was acquired by pressing open the gland from the rectum, the fluid was then examined microscopically and bacteriologically by Dr. Spencer, who will give you his report in addition to mine, and will illustrate the importance of our investigation through some excellent drawings.

As I proceeded in my investigations I began to utilize his method of pressing out the prostatic secretion for therapeutic purposes. At first in a number of cases the palpation of the prostate was quite painful. Later all tenderness gradually disappeared. I therefore combined with my diagnostic object in pressing out the prostatic secretion, a systematic massage of the gland and could very soon macroscopically as well (in the appearance of the fluid) as microscopically (in the gradual disappearance of pus cells) notice a decided improvement. At the same time in those cases which presented subjective symptoms the symptoms gradually disappeared under the beneficial influence of the massage.

One case will illustrate the satisfactory results obtained by this method:

Patient C., aged 29, consulted me early last winter. He had suffered from repeated attacks of gonorrhea, a slight discharge having been present for the last two or three years. In the last eight months he had been under very able treatment in New York, as well as here, with the result that all discharge had disappeared and no other symptoms were present. As he intended to marry shortly he wished to satisfy his mind upon the possible danger of infecting his future wife. In this case the two-glass method gave a negative result, both portions being absolutely normal. In palpating the prostate from the rectum it was found slightly enlarged and the left lobe was very painful to the touch. The microscopic examination of the prostatic secretion showed an abundance of pus cells. The third urine portion, voided after the expression of the prostate was cloudy and contained several threads, in which there were found gonococci. I advised the patient to postpone the wedding, which he did. Meanwhile I treated him with systematic massage of the prostate with the very satisfactory result that after two months all threads had disappeared while the prostate appeared to be normal in every way. His wife is perfectly healthy up to date.

Since then I have treated several other cases similarly, and desire to mention particularly one case in which we both, Dr. Spencer and myself, after each expression of the prostate made a careful microscopic and bacteriologic examination of the prostatic secretion. Here the gradual decrease of pus cells was accompanied with the disappearance of subjective and

objective symptoms. In another case I have to report that the improvement is only very slight up to date. Undoubtedly this method will fail to give satisfactory results where the prostatitis is complicated with a severe chronic spermato-cystitis.

Our material has not been large enough at present from which to draw absolutely certain conclusions. Even in the limited number of normal cases we could obtain for our purposes we could occasionally notice an invasion of round cells, indicating a congestive condition of the prostate. This was in one case most decidedly due to a hyper-irritation of the genital apparatus by masturbation. The positive value of our investigations still lacks the presence of gonococci in the prostatic secretion of any of our cases. Dr. Spencer will give you his reasons why the absence of gonococci in the prostatic secretion does not prove the absence of an infectious condition of the gland. Still I am ready to confess that the positive proof of a gonorrheal prostatic can only be obtained by the presence of the gonococci.

From our preliminary investigations—we intend to publish the result of our future studies upon this subject at a later date—I am convinced that much harm to the female genital apparatus will be avoided if any man having suffered from chronic gonorrhea is examined in regard to his prostatic secretion before marriage. No patient who has suffered from chronic posterior-urethritis can be pronounced as cured without an examination of his prostatic secretion. The best treatment—if no after symptoms of posterior urethritis are present—will be the systematic massage of the prostate. If symptoms of post-urethritis are still present the massage of the prostate might be combined with a local treatment of the posterior urethra.

## II.—ITS MICROSCOPIC AND BACTERIOLOGIC ASPECTS.

As an indispensable adjunct to the rational therapeutics of chronic prostatitis, we must consider the microscopic phases of this affection. Owing to the limited time and material at our disposal, our observations are necessarily incomplete. Such as they are, however, they are of the greatest interest to the urologist, and importance to the patient. Owing to more or less imperfect diagnostic methods, the knowledge of the actual condition of the prostate gland has been left largely to chance. Reliance has been placed principally upon the subjective symptoms of the patient and the very meager objective symptoms which he presented. By the aid of the comparatively simple method of expression of the contents of the prostatic follicles, as outlined by my colleague, Dr. Krotoszyner, and by a microscopic examination of the expressed fluid, a great flood of light is thrown upon the actual conditions present.

The literature upon this important subject up to the present is exceedingly scanty. Fürbringer, of Berlin, may be regarded as the pioneer in the use of improved direct diagnostic methods of ascertaining the exact condition of the diseased prostate. A notable contribution is that by Finger, of Vienna, in the *Archives of Dermatology and Syphilis* in 1893, afterward incorporated in the last edition of his work on "Blenorrhea of the Sexual Organs." As my colleague, Dr. Krotoszyner, also refers extensively to this work, I will confine myself solely to the microscopic features. He examined the prostates of patients known to have had posterior urethritis dur-

ing life, but who died of intercurrent diseases. He found a number of cases in which the gland follicles were filled with desquamated epithelial cells. In such, during life, the prostatic secretion had shown nothing beyond a striking increase in the number of epithelia. In another group of cases examined in a similar manner, beside the desquamated epithelia, he found numbers of polynuclear leucocytes completely filling the gland tubules. In these cases, during life, the expressed prostatic secretion showed large numbers of pus cells in addition to the epithelia. Neither set of cases presented any subjective symptoms as affecting the prostate.

The last article on this subject appeared in the *Berliner Klinische Wochenschrift*, May 21, 1894, by Dr. Tonton, of Wiesbaden, entitled, "The Gonococcus and its Relation to Blenorrhic Processes." Among other matters he writes "that he believes in the possibility of a continuance of chronic inflammatory processes (in the genital tract), without the presence of gonococci." He further believes it reasonable to assume that the vascular lesion caused by the virus may outlast the virus itself and be the cause of continued exudation. An extension of the process is due to the presence of the virus itself.

In order to make comparisons which should be the more striking, we have expressed the prostatic secretions of a number of normal cases, who have never had a gonorrhea or any known inflammatory lesion of the genital tract. For present purposes it will suffice to describe the microscopic findings in three cases:

*Case 1.*—Age 19 years. Fluid expressed shows immense numbers of lecithin granules. Of these the majority are very minute in size; many are larger, approximating in size a red blood cell. They are perfectly circular in shape and present a uniform hyaline appearance. The majority lie free in the fluid or may lie on an epithelium, or corpus amylaceum.

There were numbers of medium-sized cells, presenting for the most part a densely granular structure, and containing several glistening bodies which were undoubtedly oil globules from a beginning fatty degeneration. The majority of these were simply granular.

There were moderate numbers of cylindrical epithelial cells from the gland follicles of the prostate. These presented a characteristic appearance of a long spindle-shaped cell body terminating in a long stem-like process. In certain cases this process branched at its extremity and formed two rootlets, as it were. Each cell contained a large oval nucleus, and was granular. There were a very few cells with one nucleus, which we regard as lymphocytes and of no pathogenic significance.

There were a few motionless zoöspers scattered about.

*Case 2. Normal Prostate.*—H. S., age 19 years. Fluid appeared in rather unusual amount for one of his age, at the meatus. Upon microscopic examination, there appeared numerous lecithin bodies as described in the previous case. A moderate number of medium-sized cells, presenting the granular appearance before referred to and also evidences of beginning fatty degeneration; corp. amylacea; a very few scattering cells, with one nucleus, which we regarded as lymphocytes; a number of the characteristic cylindrical epithelia; a few zoöspers.

*Case 3.*—H. H., age 24 years. Never had gonorrhea. Abundant lecithin bodies; abundant granular cells with a few showing fatty degeneration; lymphocytes; cylindrical epithelia, and corpora amylacea.

*Case 4.*—S., age 33 years. Although we have examined several cases of chronic prostatitis, this case will stand as a type in lieu of a detailed description of the others. The case has been under treatment for nearly six weeks. The fluid at first expressed contained an abundance of dense flocculent masses, which upon examination proved to be closely packed masses of pus cells. At the beginning the expressions were carried out about twice a week, and subsequently once a week. A striking feature of the fluid was the unusually large cells, which had undergone granular

and fatty degeneration. These occurred in groups. There were also the numerous lecithin granules, as in normal cases; cylindrical epithelia, and a few zoöspers. With each succeeding expression, the diminution in the number and arrangement of the pus cells was very marked. After the second or third expression and instillation of silver nitrate solution, the pus cells ceased to appear arranged in the dense groups as at first. They became progressively more scanty and scattered through each field of the microscope. Finally, they were so reduced in number as to give evidence that the process had come to a close. A similar course obtained in the behavior of the pus cells in the other cases examined.

The corpora amylacea showed the structure of concentric laminae, and more or less well-marked cleavage as one might be led to expect in crystalline structures. There were also a number of more or less cylindrical-shaped bodies, which consisted evidently of hyaline casts of the prostatic follicle, as described by Paget, Clark and Fürbringer. In this case there were large numbers of isolated pus cells. Many cylindrical epithelia as in the normal cases. Abundant lecithin granules. A few zoöspers.

*Case 5.*—S., age 43 years. Fluid contained an abundance of flocculent threads. Upon microscopic examination, these threads were found to consist exclusively of pus cells grouped in masses held together by a scanty amount of mucus. In this case there were numbers of corpora amylacea, fatty and granular cells, lecithin granules and epithelia, as in the previous case.

*Case 6.*—R., age 24 years. This case presented features resembling those of the previous case. The fluid expressed contained numerous shreddy floccules which consisted of densely grouped masses of pus cells, corpora amylacea, epithelia and zoöspers.

The importance of our diagnostic methods is well illustrated in Case 6. After apparent subsidence of all of the symptoms and physical signs of urethritis, an expression of the prostatic contents revealed the presence of an abundance of pus cells in the characteristic manner, thus necessitating still further treatment.

*General Observations.*—From our observation we have concluded that, in the normal cases, the large cells seemed uniformly smaller, and showed less of a tendency to fatty degeneration than in the cases of the maturer and infected cases. From this we are led to the deduction, that these bodies do not reach the large size, and show evidences of fatty degeneration, in young persons whose sexual functions are as yet in a more or less dormant state. In Case 2, in which the sexual function was already somewhat active, we observed an increase in the number of lymphocytes. While this increase may hardly be said to assume the importance of indicating some pathologic change in the prostate itself, yet we regarded it as evidence of a functional over-activity. It is interesting to observe that upon a subsequent attempt to obtain fluid from this case the fluid was distinctly sanguinolent and upon examination proved to contain large numbers of red blood cells. Upon questioning the patient we found that he had indulged freely in sexual pleasures on the day preceding our expression. Through this indulgence the prostate became undoubtedly hyperemic and, owing to the presence of round cells, showed a condition of irritability.

As regards the presence of the above mentioned hyaline casts, we agree with others that they seem to occur toward the close of a desquamative prostatitis, as verified by our own experience. In order to exclude all doubt as to the nature of those bodies which we have regarded as pus cells and lymphocytes, we treated them with a 20 per cent. solution of acetic acid. Upon clearing the pus cells were found to be uniformly polynuclear, and the lymphocytes mono-

nuclear. According to certain authors, there are mononuclear pus cells, but Ziegler's "Pathology" in the last German edition says: "Among the cells emigrating from the circulatory system, two forms may be distinguished, viz: mono- and polynuclear, and the term pus cell refers to the polynuclear forms."

Fürbringer, in his classical work, "Die Inneren Krankheiten der Harn u. Geschlechtsorgane," edition 1890, states, that pus cells may appear plentifully in prostatic secretion as a result of a catarrh confined to one gland follicle, and not of the entire organ. Under all circumstances the finding of the large and beautiful Böttcher crystals, determines the secretory involvement of the prostate. The addition of a drop of a 1 per cent. solution of ammonium phosphate to a drop of the expressed fluid on a slide, should show these crystals after the lapse of an hour. Further, he says: "It must be admitted, that these crystals may not be found in true prostatorrhoea, because of extensive chemic changes in the gland secretion, especially in those forms tending to form necrotic areas and abscesses, also because of the admixture of urine." But the failure of this reaction by no means weakens the proof in the positive results afforded by their presence.

We have endeavored to demonstrate the presence of these crystals in each of our cases, according to the method indicated, but as yet without success, perhaps owing to the obstacles mentioned. Likewise in each case we have searched through many specimens for gonococci in the pus cells of the expressed secretions, but without success. Undoubtedly, with the advantage to be derived from examination of greater clinical material, our efforts in this direction should be successful.

Our method of staining for gonococci is one which has given us beautifully clear pictures, and generally brilliant results. It is that recommended by Lanz in No. 9 of the *Deutsche Medicinische Wochenschrift*, of this year. Briefly it is as follows: Spread on the cover-glass, dry and fix in the usual manner, being particularly careful not to overheat in fixing. Immerse from one-half to one minute in a 25 per cent. solution of trichloroacetic acid. Wash, dry, and fix again. Then immerse for about five minutes in a solution of thirty cc. of distilled water, to which add enough of a saturated aqueous solution of methyl blue to give a deep blue tint, and one or two drops of a 5 per cent solution of caustic potash. The gonococci will appear deep blue, and the rest of the cells a lighter blue. A double stain may be produced by immersing the cover-glasses for a few minutes in a dilute solution of Bismarck brown. The cell protoplasm will take on a greenish or brownish hue, while the gonococci will remain unchanged. As a negative criterion in cases in which all other methods of determining the presence of gonococci fail, cultures may be made. They grow only on such media as blood-serum, serum-agar or blood-agar, in the form of minute dewdrop-like colonies. It is a distinguishing characteristic of gonococci, that they do not grow on plain nutrient gelatin or agar.

In conclusion, we must express our regret that our limited time and clinical material have not enabled us to give you more extensive results, but we trust that the little we have presented will serve as a stimulus to our colleagues to devote more time and painstaking methods to the examination and treatment of

this hitherto somewhat unsatisfactory class of cases. If by definitely excluding all possibility of infection after an attack of specific urethritis, we may lessen the misery entailed on young wives through innocent contact with husbands pronounced free from infectious possibilities by their medical advisers, we may feel some degree of satisfaction; if in no other way, at least by curtailing some of the work of the gynecologists.

## ON THE TREATMENT OF PHLEGMONOUS ERYSIPELAS AND OTHER FORMS OF SUPPURATIVE INFLAMMATION BY IMMERSION IN ICE WATER.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY HENRY BERGSTEN, M.D.

RENO, NEVADA.

Phlegmonous erysipelas, phlegmonous inflammation, or pseudo-erysipelas, as Billroth terms it, I, in my earlier experience, found an intractable and destructive affection materially interfering with the future usefulness of the hand, the part most commonly affected.

After having treated a number of cases by the old method of free incision, local applications, hot fomentations, etc., with the usual results, it occurred to me that the rapid destruction of tissue was due to excessive heat, and that if some method of reducing the temperature were adopted the effect would be prevented. Cold has always been used as a method of treatment, with the added caution that it was liable to produce gangrene, as in these cases there is a natural tendency to that result. Pressure, such as would be produced by the application of ice would increase that danger, so the thought occurred to me to use immersion in ice water, and I will now cite a couple of cases treated in this manner:

In December, 1875, J. M., a half-witted fellow, becoming alarmed at something in the night, thrust his hand through a pane of glass. He came to my office the following morning, and I found an incised wound extending along the back of the hand from between the second and third fingers to the wrist. I brought the parts together with four silk ligatures, and giving him a carbolic lotion, told him to return in a day or two. He returned on the second day and I found the hand enormously swollen. The skin, of a roseate hue, with the well-known doughy feeling of erysipelas. I at once removed the stitches, and quite a quantity of ichorous pus escaped. I painted the surface with iodine, gave him the tincture of the chlorid of iron internally and ordered the application of flaxseed poultices. He returned on the following day, and the quantity of pus had greatly increased; the hand having assumed the well-known feeling of a bag filled with loose bones. I directed him to go home, fill a basin with water, and after putting in a large lump of ice to keep his hand completely and constantly immersed, and when he was ready to sleep, to wrap a towel, which had been previously dipped in ice water, around his hand and to renew the application every time he awoke, and, as in his mental condition he slept but little, it was kept pretty constantly immersed. In addition to the iron I had previously ordered, I gave him liberal doses of quinine, together with wine and nourishing diet. For the first twenty-four hours, I was rather uneasy about the treatment, visiting him every few hours to watch its progress. To my delight, suppuration ceased almost immediately, and to my amazement on the following day I found granulations springing up in various portions of the wound, which continued to do well and I discharged him at the end of twenty-one days, the wound being completely healed and the hand unimpaired.