

practice of pediatrics differ from that in the large city?

It is needless to say that any specialty can be, and should be, practised in the large cities, which through their special hospitals and medical schools, have become medical centers. It is under such ideal conditions that a specialty can grow to its best possibilities, and it is to the men working in such ideal surroundings that we look for the scientific advancement of the specialties. Rare and interesting cases may, of course, occur in communities far distant from medical centers, but without the equipment and surrounding of these centers it is often impossible to obtain the best results and learn the most from these cases.

The fundamental difference between medical practice in a large city and in a small city is in the type of practice. In the large cities the specialists may safely be said to outnumber the general practitioners, whereas in the smaller cities the general practitioner is still in the majority. It is in this latter fact that we find the chief difference between the practice of pediatrics in large medical centers and in the smaller city. The diseases of children have always constituted a large proportion of the general practitioner's work, and naturally he dreads the possibility of losing that work. Our problem becomes, therefore, the relationship of the pediatricist to the general physician.

Owing to the large percentage that children constitute in the general physician's practice, the pediatricist must, of necessity, come in daily contact with the family physician, and he is obliged to become very circumspect in defining the limits of his specialty. The general physician may be glad to turn over a feeding case to the specialist, but at the same time be very loath to give up a case of bronchitis. For this reason, although infant feeding and its problems constitute a large part of any pediatrician's work, it is especially true in the smaller city, where he may even be known by the laity as the specialist for babies rather than for children.

Because of the large educational propaganda concerning child welfare, people are demanding, more and more, special training in the physician who cares for their children. This is daily making the chance for the pediatricist's success much greater, but it is also complicating his relationship with the general physician. I think it can safely be said that no specialty requires more tact and patience in this respect than pediatrics.

Of necessity much of the work in the smaller city must be clinical in character, the scientific research work coming to us from the medical centers. The educational work, however, is just as important, and should be carried on just as thoroughly in the small as in the large city. Pediatrics is primarily a specialty of preventive medicine. Our chief aim is to produce healthy

babies, healthy children, and thus healthy adults. This necessitates a keen interest in municipal health problems. Proper housing conditions, the securing of clean milk from tuberculin tested cows, milk depots, instruction of mothers, the nursing and oversight of mothers during pregnancy, summer camps for babies with their mothers, playgrounds, schools, both the buildings and curriculum, conditions in the factories and stores as they relate to mothers and children, hospitals equipped to care for babies and children, and the instruction of nurses, especially as to the proper care of babies: such are some of the problems which will come to us, and should require our active interest. Altogether the specialty covers a broad field, and there is a place and need for the pediatricist in the smaller city.

Therapeutic and Preventive Medicine.

THE MANAGEMENT OF GONORRHEA.*

By J. DELLINGER BARNEY, M.D., F.A.C.S., BOSTON.

[From the Genito-Urinary Department of the Massachusetts General Hospital.]

IN discussing the management of gonorrhea, I shall draw largely from our experience in the genito-urinary clinic at the Massachusetts General Hospital, where for some years we have undertaken the intensive study of this infection in men, women and children. I shall weave into my remarks certain observations which close contact with a large amount of clinical material has made justifiable, but which you will find differ from generally accepted beliefs and from what the text-books have taught. While it is obviously impossible to cover the entire subject in the scope of this paper, there are certain points on which I wish to lay special stress, and which, as general practitioners, you may find of value in your daily work.

The vaginitis of little girls and babies is astonishingly common. In most the gonococcus can be eventually demonstrated, but often only after many smears, stained by the Gram method, have been examined. Even though the specific organism is never found we are led to regard a chronic vaginitis, occurring in a baby or little girl, and resisting a fair amount of good treatment, as of gonococcal origin. This belief is often confirmed by the discovery of a positive smear in the mother, or some other member of the household with whom the patient has been more or less closely in contact. Should the gonococcus fixation test of the child's blood prove to be moderately or strongly positive, one's doubt will also be removed, and for this

* Read before the Springfield Medical Society, February 28, 1916.

reason this test should be made in all cases where the microscope fails to reveal the organism. A blood test which is reported as "weakly positive" or "negative" is of doubtful value under these conditions.

Our treatment of these cases presents no startling innovations. Douches of potassium permanganate 1-5000, or of silver nitrate 1-1000, given by means of a small rubber catheter connected with a fountain syringe, are of value. Of even greater importance are daily or twice daily distensions of the vagina with argyrol (5 or 10 per cent.), or protargol (1 per cent.) This is best done with an ordinary cone-pointed glass urethral syringe, the nozzle of which should be pressed against the vaginal orifice so as to prevent the too rapid expulsion of the injected fluid. The mother should be shown how to do this, and then be instructed to do it at home once or twice a day.

Owing to the undeveloped state of Bartholin's and of Skene's glands, and of the uterus and Fallopian tubes, gonococcal infection of these structures is uncommon. For this reason, blood-borne metastases such as arthritis, endocarditis and iritis are rarely seen in childhood. Yet in the presence of these lesions, the possibility of their origin from a gonococcal vulvovaginitis should not be overlooked. While some of these children can be cured in a few weeks, this result can be attained in others only after many months of persistent and careful treatment.

From our experience with gonorrheal urethritis in male babies and little boys (fortunately rare in comparison with girls) we are convinced that these infections are almost without exception of venereal origin. In these children there is evidence of an infection of the entire urethra and trigone as shown by the uniformly cloudy urines, and the frequent, urgent, and painful micturition which accompanies inflammation of the bladder neck. In spite of this extensive infection I have never seen the complications which so often attack the adult male, owing, no doubt, to the lack of development of the glandular structures of the genital tract. While in little girls there is generally no indication for internal medication, measures which will reduce the irritability of bladder and urethra are of importance in boys. These comprise an excess of liquid in the form of water or of milk, together with a urinary antiseptic, preferably sandalwood oil in 5 minim doses thrice daily. In addition to this, frequent or even daily injection of the entire urethra with argyrol or protargol should be given. The resistance of the external sphincter is so slight in these children that injection with a simple medicine dropper is sufficient to irrigate the entire urethra and bladder neck. Fortunately, the duration of the disease in these children is comparatively brief, generally not over a few weeks.

The subject of gonorrhea in the adult female opens a long and dreary chapter which may

drag itself through many months, or even years. While the duration of the disease and its severity may be favorably influenced by early, frequent, and intensive treatment, no rosy delusions can be maintained. In a minority of cases the infection is confined to the urethra and may be cured in a few weeks; in most the cervical canal becomes infected, necessitating many weeks or months of local applications of tincture of iodine, 10 per cent. silver nitrate, or even crude carbolic acid. During this time the vaginal vault is filled with a thick, tenacious, mucopurulent discharge, a plug of which protrudes from the cervical os. In many cases nothing short of a thorough curettage of the cervix and an application of the actual cautery will effect a cure. Infection of the endometrium and of the Fallopian tubes introduces a new, and even more serious chain of complications. We believe that infection of one tube leads sooner or later to that of its fellow, and that in any event a tube once infected may be a source of potential danger. For this reason, salpingectomy, generally bilateral, is always to be regarded as a possible necessity. In certain cases the ovary must also be removed, but in these cases its infection arises not from the gonococcus, but from pyogenic organisms. In dealing with this organ, especially in a young woman, the conservatism compatible with safety must not be lost sight of.

Gonococcal infection of Skene's glands is frequent. It is a most stubborn complication, generally giving rise to little or no annoyance. The treatment of these infected glands is often difficult, owing to their inaccessibility. Their mouths may lie just within the external meatus, in which case they can be injected only by everting the lips of this orifice with forceps after the use of a local anesthetic. They can then be injected with a strong solution of silver nitrate (2 to 10 per cent.) by means of an ordinary hypodermic syringe equipped with a blunt-pointed needle. In addition to this, it is our custom to inject the entire urethra with argyrol at every visit. As stricture of the urethra is by no means uncommon in women, and as it may have the same pathological basis as in men (infection of the urethral glands) careful treatment of this structure is an important matter.

Despite every effort, an involvement of one or both of Bartholin's glands may intervene. In this event, drainage of the resulting abscess is to be regarded as only a palliative measure. Exacerbation of the infection is practically inevitable, and the only cure of this complication lies in the complete removal of the gland. Meantime it is a source of real danger, not only to the patient, but also to others. I have yet to see an infection of Bartholin's gland produced by organisms other than the gonococcus.

The importance of the radical treatment of infections of the deeper structures of the female genital tract lies in the fact that they are more than likely to give rise to metastatic complica-

tions such as arthritis, iritis, and endocarditis. In this connection it may be said that we regard vaginal douches, whatever their ingredients, as valuable more for their cleansing, than for their therapeutic effect.

As gonorrhea in the male is far more frequently seen than in women or children, a thorough understanding of its extent, and of the difficulties associated with its diagnosis and cure is of the utmost importance.

Let me say at once that a simple urethritis, which affects only the anterior urethra, and which may be cured in about a month's time, forms only about one-tenth of all our hospital cases of this disease. While we believe, of course, that the gonococcus infects only the anterior urethra at the outset, we also believe that it invades the posterior urethra and prostate at an early date, generally before the patient seeks relief. It is undoubtedly true that bad treatment or neglect may hasten the invasion of the deep urethra, but, on the other hand, it is equally true that this catastrophe may occur in spite of the best treatment. In other words, infection of the posterior urethra and prostate results from a bacterial progression over which we have little or no control.

As it is of the utmost importance to determine the degree and extent of the infection in every case, we have adopted the following routine method of examination.

A careful history is taken of the number and date of previous gonococcal infections, together with their duration and complications, and the present condition is inquired into in detail. It is extraordinary how many stubborn cases one sees with a slight urethral discharge as the only symptom. For various reasons which I shall point out later it is advisable to investigate the urinary history, including frequency, dysuria, and urgency, and also any symptoms pointing to past or present disease of the kidney or bladder.

The presence of a urethral discharge is noted and a careful inspection of the external genitals made. This may reveal an obscure focus of infection which has escaped the attention of both the patient and his physician, but which may be sufficient to account for the chronicity of the disease. I refer especially to the little false pockets close to, or just within, the meatus, and to infected urethral follicles. The epididymides and vasa deferentia should be carefully palpated, as pathological changes in their structures may have an important bearing on the past or present condition. The urethra is then calibrated from meatus to external sphincter, or cut-off muscle, for it is not an uncommon experience to find a stricture which gives no symptoms of its presence other than a chronic urethral discharge. On the other hand, one not infrequently sees a patient who is said to have or to have had a stricture of the urethra, and in whom no such lesion can be found. The error may be

explained by the statement that localized spasm of the urethra may sometimes so closely simulate stricture that only the most experienced hand can detect the false from the true, and then, only when the patient is fully etherized. Calibration of the urethra is best carried out with a flexible bougie, or better, a *bougie à boule*, 27 French in size, or as near this as the meatus will admit. If this instrument passes smoothly no stricture is present. Before asking the patient to urinate, his anterior urethra is carefully rinsed out with plain water, or with a solution of boric acid solution or permanganate. The presence of shreds in this fluid is then noted. After this the patient is requested to pass his urine in two glasses. As the anterior urethra is now clean, shreds or turbidity in the first specimen must come from that portion of the urethra lying behind the cut-off muscle. The second glass will be clean unless the infection of posterior urethra and prostate is extensive, or unless the entire urine is infected from a pathological condition of bladder or kidneys. In this event the third and subsequent urines passed will also be turbid. Without preliminary irrigation of the anterior urethra the time-honored "two glass test" may be of no value, and lead to erroneous conclusions. We believe that the normal bladder can be infected only with difficulty. It is only when the bladder has been severely traumatized, during confinement, for example, or when there is residual urine from mechanical (diverticulum, obstructing prostate) or nervous (tabes) origin, that one should hesitate to pass a catheter without first giving a urinary antiseptic. Therefore, in most cases it is justifiable to pass a small soft rubber catheter into that viscus. This serves two purposes; first, it shows the presence of residual urine, indicative of a bladder diverticulum, or of an obstructing prostate; second, it enables one to fill the bladder with the irrigating fluid. This being done, a rectal examination is made and any pathological changes noted in the prostate, seminal vesicles or ampullae. While such changes are of importance when found, an apparently normal condition of the structure named may be revealed. Gentle massage is then performed and in most cases a drop or two of prostatic and vesicular secretion can be expressed from the external meatus. A drop of this is examined under the microscope, dried and stained with methylene blue, or merely mixed while wet with a drop of ordinary acetic acid. By either method, the presence of pus in the prostatic secretion can be detected and spermatozoa can be seen. The amount of pus is a valuable indication of the degree of prostatic infection. The presence of spermatozoa is an important finding, but their absence does not necessarily signify that the patient is sterile. Cultures of this expressed secretion are of little practical value. They will be either sterile, or show only a profuse growth of the staphylococcus.

While the actual performance of this so-called "localization test" can be carried out in 5 or 10 minutes, it enables one to say with great accuracy just what structures are infected and to what degree. In the light of these findings intelligent and efficient treatment can then be instituted. One's opinion of the case will also be largely influenced by the result of a gonococcus fixation test of the blood, and this should always be done, especially in the presence of doubtful or negative clinical findings. A strongly or moderately positive reaction indicates the presence of the gonococcus somewhere in the body. Occasionally it may persist after the disappearance of the gonococcus and be due to the presence of antigens already formed. On the other hand, a weakly positive or negative test is of value only in conjunction with the clinical findings. If no clinical evidence of gonorrhea can be found after repeated examination, one must say that the disease is cured; if, however, the clinical signs are clear, treatment should be continued until they disappear. The question of cure is often one of the utmost difficulty, since the possible infection of a present or future wife is always at stake. We believe that the rule should always be "safety first," and that too much rather than too little treatment should be given. It is our experience that the cure of chronic prostatitis, if no complications intervene, takes anywhere from three to six months, often longer.

Let us now take up, seriatim, some of the points brought out by our routine examination. Many smears of the urethral discharge, stained by the Gram method, may fail to show the presence of gonococci. Cultures, planted on hydrocele agar, may be likewise negative. Although positive results are rarely to be obtained from the discharge after the lapse of a few weeks or months, persistently negative results do not necessarily mean that the patient is free from gonococci.

It is important to search for stricture, as this lesion will often give no evidence of its presence other than a chronic discharge. In fact, it is the only cause, so far as we are aware, of a chronic anterior urethritis. It should also be remembered that a stricture resulting from gonorrhea cannot form until the lapse of at least three, probably five, years after the initial attack. There are cases in which the value of this evidence from a medico-legal standpoint may be great. In any event, it bears out our belief that one of the symptoms of gonococcal infection is a gross disregard for the truth on the part of the patient.

I spoke of the infection of the urethral follicles. This may occur at any point along the urethra, resulting in the familiar periurethral abscess. It is this which lays the keel for the future stricture. Those follicles which lie on either side of the frenum seem to be peculiarly susceptible to infection. Even after the abscess

has ruptured or has been incised, history may repeat itself in the form of a re-infection, not only of the follicles themselves, but also of the entire urethra. A minute fistula generally follows and this proves to be a source of annoyance to the patient by its constant discharge of pus, and, at times, of urine. Complete excision of the whole infected mass is indicated. It is a simple procedure and if properly done will put an end to the difficulty at once.

The false pocket which lies near to, or within, the meatus is of congenital origin. It has a mucous and submucous lining and while it is usually a mere dimple, it not infrequently will prove to be half an inch or more deep. The gonococcus will cling to this haven of refuge with surprising tenacity and can be ousted only by complete excision of the pocket. The chief reason for the removal of this pocket lies in the fact that it may repeatedly re-infect the urethra.

We have found it good practice to divide up to normal size (28 F.) a congenitally small (not admitting a 21 F. sound), but otherwise normal meatus, or one which is associated with the balanic type of hypospadias. Free drainage is most important and a small meatus will only add to the chronicity of the disease.

There are several things which one learns from long experience in the study of gonorrhea. One is that chronic urethritis, in the absence of stricture, generally means chronic prostatitis. Early and thorough treatment of this organ by massage is, therefore, strongly indicated. We are constantly seeing patients whose physician has regarded the prostate as normal, or has massaged for a long time without effect. It will be remembered that one often can detect no pathological change in the prostate or vesicles by the examining finger, and the microscope must be depended upon for the facts. If massage has proved to be of no value, we believe that it is because this procedure has been improperly performed, or carried out for an insufficient length of time. It must, however, be admitted that we occasionally see a case in which, despite all effort, the symptoms and signs show no improvement, even after weeks or months of treatment. The source of the infection must then be searched for in one of the unusual structures such as the verumontanum or the seminal vesicle.

Another thing which we have learned is that other diseases of the genito-urinary tract may antedate or intervene during an attack of gonorrhea. We are constantly making discoveries of this nature. I recall two cases, which I have recently seen, of diverticulum of the bladder, in whom the long-continued treatment for chronic prostatitis was of no value. A persistently cloudy urine, and a considerable and constant residual aroused suspicions which the cystoscope confirmed. Removal of the diverticulum has cured both patients.

I have now under observation two cases of ureteral calculus referred to me by their physicians for the cure of an apparently stubborn prostatitis. In one, there has never been a symptom suggestive of stone; in the other, a careful cross-examination brought out a history of vague pain referable to the right kidney. In both cases the cloudy urine, containing albumin, blood and pus aroused suspicion of a lesion other than that produced by the gonococcus. The cystoscope and x-ray clinched the diagnosis. I have removed more than one tuberculous epididymis which became acutely inflamed during a gonorrheal infection and I could recite to you the history of several patients whose kidney infection, tuberculous or pyogenic, was entirely lost sight of during the intense study given the prostate and posterior urethra.

When it is remembered that the genito-urinary tract, both of the male and female, is not made up of smooth-walled tubes and cavities, but is a series, more or less closely in contact, of compound racemose glands, each with a small orifice, it is not surprising that the gonococcus is so hard to dislodge. In the female, the glands of Bartholin and of Skene, the deep crypts lining the cervical canal, and the narrow and tortuous Fallopian tubes; in the male, the meatal pockets already described, the innumerable follicles distributed the length of the urethra, the sponge-like prostate with its many minute orifices opening into the posterior urethra, the blind pocket of the verumontanum, and the extremely complex and tortuous cavity of the seminal vesicles and ampullae with their drainage dependent entirely upon the small calibred ejaculatory ducts—all these combine to give the gonococcus a foothold which may baffle the best of us.

But there can be no question that, barring reinfection, the gonococcus spontaneously dies out sooner or later, leaving behind evidences of prostatitis and urethritis which may be perpetuated by other organisms for an indefinite period. As to the persistence of gonococci in the urethra, no more authoritative statement can be found than that of Keyes (*American Journal of the Medical Sciences*, Jan., 1912). He tabulated "the results of laboratory investigation of 86 patients clinically cured, or nearly cured, of urethral gonorrhea." Thirty-six were investigated by the complement fixation test, 77 by smear and culture. He felt "justified in stating that in 64 cases gonococci disappeared in less than a year, in 7 others with urethritis, examined from two to eight years after the onset, gonococci were not found, while in 6 gonococci persisted from one to two years."

"I have never seen one . . . that convinced me he had harbored gonococci more than three years."

A word as to vaccines should not be omitted. We have tried them faithfully in both private and hospital practice over a long period. Vari-

ous types of vaccine, autogenous and stock, sensitized and non-sensitized, are constantly being put forth, each said to be the *sine qua non*. All I can say is that not one of them has proved of the least value, either to cure or to alleviate the symptoms. Being optimistic, we are awaiting the appearance of some preparation which will actually fulfil the claims made for its predecessors.

In conclusion let me tell you what evidence is demanded by the Genito-Urinary Clinic of the Massachusetts General Hospital for a cure of infection by the gonococcus. This standard has been agreed upon only after careful study of the disease as it affects children and adults. The patient must meet these requirements at least once, preferably twice or three times at intervals of at least two weeks and not less than a month after the cessation of treatment.

In the male we require:

1. Absence of gonococci.
2. Gonococcus fixation test negative.
3. Clinical evidence
 - a. Clear urine.
 - b. No pus in prostate or vesicles after three examinations, or pus present but a negative blood test.

In women we require:

1. Negative gonococcus fixation test.
2. Absence of clinical evidence in the lower tract.
3. Negative pelvic examination.

Finally in female children we require:

1. Absence of gonococci.
2. Little or no pus in the vaginal smear.
3. Negative gonococcus fixation test.

There can be no question that the average general surgeon or practitioner is incompetent to undertake the treatment, and especially to determine the cure of a gonococcus infection of the urethra. By so doing he assumes a burden of responsibility which he has no right to bear and which, at a subsequent time, may work serious harm to the patient and through him to the community. Strange as it may seem, the physician at whose feet the blame is to be laid, either through ignorance or dishonesty, is rarely, if ever, called to account. We are constantly seeing evidences of disaster to husband or wife arising either from their own ignorance or indifference or from a faulty, but well-intentioned, opinion expressed to them by the physician. The medical profession, to say nothing of the laity, is by no means yet conscious of the serious nature of gonorrhea, of the difficulties of its management, or of the responsibility involved in pronouncing it cured. The layman is slowly awakening to the situation and is demanding better and more expert treatment and judgment. In the larger centres of population he can get this if he takes the pains; in the smaller communities this may not be possible.

But how is the layman to judge of the com-

petency of any given physician to handle his case? The mere fact that the physician claims to be a "specialist" by written or verbal advertisement avails nothing; in fact, he is usually grossly inadequate and generally dishonest. There are certain physicians whose professional reputation is such that no inquiry need be made; others can be found out about by inquiry of the proper authorities. The more intelligent laymen (especially strangers) are now getting this information in many instances from the large public hospitals, but a better and more adequate scheme is here presented. As the venereal diseases are now recognized as matters concerning the public health, it seems only proper that the State Department of Health should cooperate in seeing not only that the layman who wishes private treatment can get it from a reliable physician, but also that he should know where to turn for this information. The Public Health authorities should keep on file a list of such physicians throughout the State who, by their training and experience, and hospital and teaching connections, are competent to handle venereal disease. This would enable a patient in even the most remote community to get in touch with a thoroughly reliable and easily accessible physician. To acquaint the laity with this plan would require an educational campaign on the part of the Public Health authorities, but its benefits to the community would undoubtedly more than offset the comparatively small expense and labor involved.

Original Articles.

OPHTHALMIA NEONATORUM.*

By GEORGE H. THOMPSON, M.D., F.A.C.S., NORTH ADAMS, MASS.

THE purpose of this short paper is not so much to impart new information on a subject already much discussed, as it is to refresh our memories, and stimulate us all to do our part to lessen the number of damaged eyes and wrecked lives from this preventable disease. For does not Parson's characterization: "It is a preventable disease occurring in new-born children as the result of carelessness at the time of birth," lay the odium of its appearance on the attendant at that time?

Ophthalmia neonatorum was mentioned by the earliest writers: Soranus, a Greek physician, living A.D. 98-138, makes specific reference to it. Recognition of the connection between leucorrhoea in the mother and ophthalmia in the child dates from the investigation of S. T. Quellmalz in 1750. James Ware, writing in 1780,

* Read before the Medical Association of Northern Berkshire, January 25, 1916.

gives a good general clinical description, but does not point out that there is a relationship between the two. In 1807, Gibson, a Manchester surgeon, writing in the *Edinburgh Medical Journal*, cites definite cases establishing the connection between the two diseases, and gives specific preventive instructions. These findings were corroborated by Whitehead in 1847.

Much discussion pro and con followed, until the discovery by Neisser in 1879 of the gonococcus which, he stated, was found in the pus from ophthalmic eyes of infants and adults with gonorrheal ophthalmia, and from the secretions of specific vaginitis and urethritis; this definitely settled the question for those who were open to conviction. But there remained many who attributed the trouble to dirt, soap, colds, exposure to sunlight, etc., with frequent disastrous results.

That the leucorrhoeal discharge need not be profuse or recent was pointed out by Weeks in *The Medical Record* in 1886. In fact only 20% of mothers show acute symptoms at time of birth and the persistency with which the infection lasts was shown as early as 1853, when Smith, writing in the *Lancet*, reported a case in which two births, separated by eight years, resulted in ophthalmic infants.

The time of infection is, generally speaking, soon after birth, the infant blinking into its conjunctival sac infective material which clings to its eyelids. Doubtless at the time of the first bath there is ample opportunity for infection. But intra-uterine infection is by no means as uncommon as is held by some authorities; for Stephenson was able to collect 90 cases from the literature on this phase. It is generally believed that a great predisposing cause is prematurity, on account of lessened general resistance, and the thinness of the protective eye membranes.

The wide variance of opinion regarding the frequency with which gonococci are present in these cases seems to be due to the fact that in some series of cases, the bacteriological examinations are made before treatment is instituted, and in others, not for some days afterwards.

Another reason is the varying degrees of care used to differentiate it from other intra-cellular Gram-negative diplococci, notably the micrococcus catarrhalis. Frequently the smear shows what the examiner takes to be gonococci, which later, by growth on ordinary media, prove to be some other micro-organisms. It is only by culturing the pus that one can be sure, as the gonococci grow sluggishly and only on a specially prepared agar tube. In the *American Medical Journal*, Dr. Derby, on the basis of careful examination made in a series of cases, states that 51.3% of the 149 cases under consideration showed gonococci, and quotes Bartlett in a series of 70 cases as placing the percentage at 54. Stephenson, in 1829 cases, states that 65% showed gonococci. Some other micro-organisms commonly found in the pus are pneumococci, bacterium coli, Koch-Weeks' bacillus, Morax-Axenfeld diplobacillus, and less frequently,