

chemical conditions propitious for their growth in the natural disturbance of the normal equilibrium between the tissue and themselves.

Some preliminary non-syphilitic changes are necessary in the formation of all late lesions of syphilis. The seborrheic syphilid, the palmar syphilids, the syphilids of the mouth, may be taken as illustrations of this observation.

Syphilis is a blood-borne disease; how else could one explain the secondary lesions? There are many theories explanatory of late syphilitic lesions—Levaditi's disturbance of local immunity, Neisser's *Umstimmung*, anaphylaxis, etc.

But how do the spirochetes reach the areas of tertiary disturbance? They must be carried by the blood, and through mechanical or chemical influences stop at a certain point, proliferate, and thus cause a lesion of more or less extent. So it is with the pathogenesis of congenital syphilis. The woman is, in all probability, latently syphilitic; she has in her general circulation, at times, live, free spirochetes which are only occasionally pathogenic to her organism. She may have syphilitic scars in her vessels, or possibly a struggling colony in her aorta. The free spirochetes are carried by the circulation into the growing or forming placenta, the vessels of which being numerous or possibly abnormal present areas for them to lodge and propagate. At any rate, there is growing tissue possibly with less resistance but more vascularity. They seek mechanically the sides of the vessels; a colony is formed, and this is most frequently found on the embryonic side.

In talking this theory over with Dr. Leo Loeb, he suggested to me the following explanation: Two factors may possibly be suggested as responsible for the greater liability of the placenta to show syphilitic lesions. In the first place the placenta, being a mixed organ, partly of maternal, partly of embryonal origin, is probably only to a less extent under the influence of those substances originating in the infected mother, which cause at least a partial immunity of the maternal lesions. Secondly, it is possible that certain tissues in process of active proliferation differ in their cell-metabolism to such an extent that they do not respond to certain stimuli as effectively as do normally functioning quiescent tissues.

It is extremely rare to find spirochetes in the decidua, but they are frequently found on the embryonic side. The various pathologic conditions of the placenta depend on the location of the colonies. The organisms find in the placenta, as elsewhere, the best media for growth about the vessels.

If an early vigorous strain from a fresh syphilis in the parent is planted, an early death of the fetus will generally occur; as the strain becomes more attenuated under the influences of the immunizing bodies of the parent (an older syphilis), syphilitic children or latent syphilitic children may be born; or the infection of the fetus may be from so mild a strain that it may be entirely stamped out by the hereditary immunizing influences of the child.

It is a clinical rule of long standing that the older the syphilis in the parent, the less likelihood there is for infection of the child, which is due to the fact that such a host contains less spirochetes, and that those she does harbor are less virulent. We must mention, however, that Neisser has shown that experimental inoculations from tertiary lesions run the same course in a chimpanzee as from an earlier lesion; while others have shown that inoculations from retrograding secondary lesions give variable and uncertain results. These two

facts only illustrate the difference in the virility of the organisms *in situ*.

Mercury causes the spirochetes to disappear from the blood, and is therefore the greatest safeguard against maternal infection. Whether it attacks the organism in the marrow or lymph, where they are no doubt harbored in latent syphilis, is doubtful.

To me the theory that the latent syphilitic mother is a spirochete-carrier of organisms which in such cases appear, now and then, in the blood-stream, and are likely to settle at points of physiologic or pathologic disturbance, explains many, if not all the phenomena of parental syphilis and also tertiary syphilis. Together with this must go the recognition of the fact that the spirochete is an organism which can inhabit a host for years, without causing disturbance. It is interesting in this connection to note the results of the observations of Gaylord and Tyzzer in spirochetes in relation to cancer, that in mice and rats harboring spirochetes, when a new growth occurs in them, it is frequently filled with the organisms.

Now that Noguchi has developed a proper culture method for the spirochete, it will probably be much easier to demonstrate it in suspected fluids and tissues.

The testicle of the rabbit has heretofore been the cheapest and best medium for such demonstration, as higher animals are too expensive.

The spirochetes are very difficult to find in the placenta; writers report many failures, but cultural methods will be of great assistance in clearing up many pathologic placental conditions. It is highly possible that many appearances in the placenta, attributed to syphilis, are not this disease. Pregnant women may be carriers in this way of other organisms besides the spirochete.

There are spirochete-carriers in whom the organism is innocuous, just as there are typhoid meningococcus and diphtheria carriers. Clinical observations and many experimental investigations along other lines seem, at least, partially to confirm this fact.

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THE STUDY OF MIND IN MEDICAL EDUCATION *

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It is a truism that it is frequently the most obvious thing, the thing nearest at hand, that is overlooked and not seen. For generations the physician has been practicing his art, and only here and there has one arisen who has given any considerable thought to the plain fact that man is a thinking, feeling organism. And while in a practical way the good physician undoubtedly learns empirically to deal with his patients as thinking organisms, still in all the process of medical education there is little effort made to inculcate this fact into the mind of the student, much less to endeavor to teach him about the organization of the mind, its functions, and the way in which it reacts to disease as he is taught these things about every organ in the body.

The reason for this lack of appreciation of the mental in life is not altogether easy to arrive at. My conception of the reason is that the tremendous complexity of the human organism, which has baffled man's reason for so many generations to understand, is only beginning to be

* Read at a meeting of the Manhattan Medical Society of New York City, March 22, 1912

sufficiently fathomed so that a comprehensive grasp of the entire problem has loomed up on the horizon as an imminent possibility and it is only when such a comprehensive grasp is possible that the phenomena of mind fall into place for consideration at all, for they deal primarily with the organism as a whole and therefore it is only after its separate parts in their interrelations and interdependencies have been understood that the problem of the whole can be approached.

It is not my object at this time to enter into that much-worn discussion of the relations subsisting between body and mind. I will merely call attention to the fact that in the past the interests of the physician have been centered on the body and that he has looked at the individual purely from the standpoint of physical ailment.

Let us for a moment, however, take the other point of view and let us look at the situation from the mental rather than from the physical angle. Why does a patient who is suffering from the pain and inconvenience of a sore finger, for instance, consult the physician? It will be said that it is because his finger is sore. I say no, that is not the reason. It is because he is mentally ill at ease. The reason is a mental one and not a physical one. But, it will be said, the man has pain in his finger and that is a physical thing and that is the reason he consults his physician. Again I say no, that is not so. The pain does not reside in the finger; pain is not a physical but a mental fact. While the pain is directly due to the physical condition of the finger, the pain itself is purely a mental experience. If the man had no mind he could have no pain. And again I say that the reason he consults the physician is that he is mentally ill at ease. What does the physician do for him? The usual answer will be that he cures the physical ailment. This is true; but in doing so he is only employing a means to the end of putting the patient's mind at rest. After the individual's mind is satisfied then he is well; he no longer suffers pain; he no longer suffers from the knowledge that there is a disagreeable-looking place on his body, and he is at peace—because, it is true, the physical cause of his suffering has been removed.

Some say that this result is accomplished by dealing with the finger. I admit that by doing certain things to the finger one produces this result, but I insist that the ultimate results produced, so far as the comfort and well-being of the patient are concerned, are mental results and that the changes that are wrought in the finger are only to the end of bringing about such a mental condition. I will admit that I have taken as an example an extreme instance in order that I might illustrate the point of view from the mental angle, but let us proceed a little further and examine, with the aid of the crucial test of all matters medical, a case that came under my observation some time since.

It was the case of a sore finger, and it is for that reason that I introduce it here. A young man had slightly wounded one of his fingers, and it was infected. There was perhaps a single drop of pus inclosed in the infected territory, and there was a slight rise of temperature, as I recall it, about 99 F.; but the young man was in bed, and delirious. What now becomes of the sore finger and its problem in this general situation? The finger as a finger is sunk into insignificance, except as an index to point the way to the much larger, much more important, problem of the individual. The infection is but a barometer that measures the resistance of the patient's mentality, and with one drop of pus, a temperature of 99 F. and delirium, one can see how seriously

unstable his mentality must be, so that after all, although my original illustration might have been supposed to be academic, it is not such a far cry from the sore finger to the actual, practical, clinical problem of the disordered mind.

It will be seen from the above simple example how close, how intimate, are the relations existing between the so-called mental and the so-called physical, and how easily when one is affected the other may become involved. This, I take it, all are willing to admit. Let us see where it leads us. Only a short time ago a man came into my office, who represents a type that I am afraid is only too common. He complained of depression, an inability to work, drowsiness and lack of ambition, and such indefinite symptoms. He had rested and he had exercised; he had been to the mountains and to the seashore; he had tried to solve the problem himself, and he had had the advice of physicians; he had been through the hands of the genito-urinary specialist with no results; he was convinced that he was suffering from some kind of auto-intoxication, and he had been through the hands of a gastro-intestinal specialist, who sent him to me. This man had been able to find, after an exhaustive examination, only the slightest kind of an apparent deficiency in the digestion of starches in the intestines. The patient looked to be physically in the pink of condition. He had been to many doctors and none of them had been able to find anything the matter with him whatever, and they all seemed to be obsessed with the necessity of elaborating some kind of hypothesis to explain his symptoms without any of them ever supposing that they were mental. An hour's talk with this man enabled me to make a perfectly clear diagnosis. He was a typical example of one of those mild manic-depressive psychoses that we know by the name of cyclothymia. It is true that he had certain physical symptoms. He was troubled somewhat with constipation for example, and as I recall it, that was about the only physical symptom of any consequence that he did have. He had found out that by taking good brisk cathartics occasionally he felt better, and on such a flimsy basis a theory of auto-intoxication had been erected in his mind. And so we have here a case that is absolutely a mental case, in all its features, mistaken for a physical condition and treated as such in spite of the inability to find any real tangible physical thing to take hold of.

Then we have a class of cases that develop all sorts of gastro-intestinal disturbances after very slight errors of diet, or after efforts involving moderate fatigue, or without any apparent cause we have a certain physical upset that is focalized in the gastro-intestinal system, and these patients are treated in one way or another, by dieting, by rest, and lo and behold! by the end of two or three years we find we have developing on our hands a case of dementia præcox, and we learn by such cases that such symptoms not infrequently precede the frank outbreak of the psychosis, and so again we find back of what on the surface are physical symptoms a mental condition far more serious and usually overlooked.

Then we have a whole host of neurasthenic invalids who have some trouble with them: a cyst of the ovary, prolapse of the uterus, a chronic appendicitis, a floating kidney, and all sorts of other conditions, and as the days go by and the months drag themselves out into years these patients develop a reaction toward their physical malady which is out of all proportion to the degree of the malady itself. They are building a tremendous structure of disordered mind on a small foundation of

physical ailment, and although they do have something the matter with them physically still the physical thing has long since ceased to be the important feature in the case, and if the physician attempts to work a miracle and cure these people over night by taking out an old appendix or performing a ventro-suspension or a nephropexy, he will have one of his serious professional disappointments and ultimately not only will he retire from the battle-field beaten and chagrined, but he will also fail most hopelessly. What is more, the patient instead of being better will be worse, for throughout the years they have builded on this physical thing a certain structure of hope and the attitude of the physician may have made them believe that when it was removed they would be well; when all of this fails to come to pass they are plunged deeper into the intricacies of their mental tangle. And here again we see the importance of the mental element. And so I might go on interminably with illustration after illustration.

I have said nothing about hysteria, which, I may mention in passing, is a pure psychosis. I have only intimated the existence of the tremendous field of the psychoneuroses, and I have not mentioned that very large group of the so-called symptomatic psychoses, the mental conditions that accompany bodily disease and infections. Not only are all these various groups of mental cases important from the standpoint of medicine in the large, but it is extremely important that attention be addressed to them, because they, as it were, fall midway between the fields of operation of the internist and the psychiatrist. They do not come within the purview of the psychiatrist, at least in their earlier manifestations, while the internist pays little heed to them because he is not interested, and so a field of medicine, a study of which could not fail to be enlightening, is neglected purely because of this practical situation.

In reviewing the various groups of mental cases to which I have but casually directed attention, I think one cannot fail to see that it comprises no small number. While I am not prepared to subscribe to the statement of one of my friends at a recent medical meeting that one of these neuroses alone is the most common disease in all medicine, still I think that if the matter be given careful thought it will be conceded that it is at least debatable as to whether or not this group of diseases does not produce as much, or perhaps more, real suffering in the community than the physical diseases and injuries. So, without entering into more detail I make bold to believe that my point is clear.

With all these truths before us I return to the original statement that during the period of medical education no attention, or at least no systematic attention, is addressed to the mind in anything like the same degree of thoroughness that is devoted to the consideration of any one of the bodily organs, even the brain itself, and I ask, if these things that I have been mentioning represent an important group of cases, and I believe they do, why is not the time now ripe for such consideration in the medical curriculum?

Let us go a step further, and just glance at some of the problems that are usually considered to be social and see what bearing mental medicine has on them. To the great group of the insane I need not call attention. It is quite evident that they belong within the domain of mental medicine. I wonder, however, if we ever stop to think of the immense economic importance of their problem. There are over 180,000 insane being taken care of in the public institutions of this country at present. Think what that means in dollars and cents,

remembering that the actual cost of the maintenance of the single individual is probably the smallest portion of his real cost to the community, especially if he be a wage-earner and the head of a family.

The next great class that has to be considered in this connection consists of the idiots and imbeciles—individuals again whose inefficiency is plainly the result of mental disease and defect. Then comes a considerable class of deaf-mutes, many of whom are mentally deficient; while the epileptics we know are generally so. Aside from these classes that are generally conceded to belong to the field of mental medicine there are the paupers, who are not generally supposed to belong in this class; but what, after all, is pauperism but an inability to get along in the world, and what, after all, is an inability to get along in the world but a mental inability, with the exception, of course, of the relatively few cases of physical disablement?

Then, again, any one who has had any considerable experience with the criminal classes knows that practically the entire problem of the criminal is a mental problem, while such social questions as prostitution again group themselves under the same general category. I could give example on example of all of these statements, but in the limited space of such a paper as this it is quite impossible. The recent work with the juvenile delinquent, however, has emphasized all of these points over and over again.

Fortunately this work has also shown that many apparently mentally defective children are so only because of removable physical defects. Here is a boy, for example, who is apparently mentally defective; all he needs is an adenoid operation. Here is another who is tremendously irritable, and really it would seem as if he might be a murderer when he grows up. The whole difficulty is a myopia which is readily correctible.

On the other hand, here is a defective girl, four or five years behind psychologically. There is a girl who will become a prostitute or a criminal, or both. Now is the time to tackle the problem of whether she will or not.

The problems of criminality and of prostitution have been social problems as far back as the history of man goes, and the attempt has always been made to solve them by dealing with the finished product, but one can no more make an impression on these problems by waiting until that time than one can change the center of gravity of the earth. Man has been trying to do it for thousands of years, and he is just where he started. What is the use of waiting until this girl, for example, shall have become a prostitute, and shall have infected innumerable young men, perhaps brilliant and promising, with syphilis, to their everlasting ruin. It is too late when that has occurred. The time is now, when she is a child, and so I might go on indefinitely, for after all, the ramifications and the tremendous importance for the well-being of the state of such problems as these make a lot of the sanitary activities of general medicine look a good deal like a joke beside them in seriousness.

One may be wondering now, perhaps, what I advocate in the way of the study of mental conditions in the medical college—whether I advocate a course of systematic and laboratory psychology and the like. I shall not discuss what ought and what ought not to be taught in the way of psychology—whether we shall investigate the problems of perception and make the student go through a series of laboratory experiences with the tachistoscope, or whether we shall give him a lot of association experiments to puzzle his brains. These are matters of detail. The main thing is to acknowledge

the necessity of at least as much knowledge of the structure and workings of the mind as is insisted on with reference to any one organ of the body, and I think the same kind of knowledge is of the most fundamental importance. I would have the student who leaves his medical college to enter on the practice of medicine realize that his patients are all of them thinking, feeling beings, and that the human mind comports itself much like any of the organs of the body, much like a living organism. I would have him know how it is built up, somewhat of its structure and its mechanisms, sufficiently so that he may appreciate its phenomena as he will see them manifested in the sick-room, and I would have him understand the operation of the more important mechanisms and processes that are the result of disease.

I think I have said enough to demonstrate the necessity of some form of psychologic teaching in connection with medical education; I might add some systematic form. Just what the details should be I am not going to suggest. I merely want to draw attention to certain broad general principles. A great deal that is now taught as psychology is really nothing more nor less than physiology and could be taught in connection with the course in physiology. Such things, for example, as the physiology of the sense organs, color perception, fields of vision, hearing and smell, differentiation of taste and haptic sensations, etc. — all these might be added to the course in physiology.

The main thing that I want to combat is the old-fashioned, time-honored and widely accepted delusion that it is necessary to have a full understanding of the so-called normal human mind before the study of the diseased human mind is entered on. This delusion is based on two gross fallacies. The first is the fallacy that there is any such thing as a normal human mind, or at least that any such thing has been differentiated so that we may know what it is. The psychologists certainly have never told us what the normal mind consisted of, and what possible advantage it can be to select out of the kaleidoscopic combinations of mental elements one certain particular arrangement and label it normal and maintain that none of the other arrangements may be investigated until that one is thoroughly understood is beyond my comprehension. Secondly, why should the thesis be maintained that in order to understand certain mechanisms we should select for study the most complex machine in which these mechanisms are represented, at a time when that machine is working at its highest degree of efficiency and perfection, for purposes of study? As a matter of fact, is it not a more reasonable attitude of mind to take either a simpler machine or a machine that has been made simpler by being put out of order? Is not disease the great laboratory experiment of Nature that tears apart complex structures for us and brings certain things into prominence that otherwise would have been hidden in the mass of undifferentiated mediocrity? We would not have known anything about physiology comparable to what we do know if it was not for disease. Are not all our laboratory experiments the production of artificial pathologic conditions? What would we have known about the problem of language had it not been for the aphasias? Could we ever have presumed that there was a cortical localization of function without disease naturally or artificially produced? The psychology of the medical school should give a comprehensive idea of the human mind in the large and it is not necessary to confine itself to so-called normal psychology in order to do that, nor,

on the other hand, to confine itself to abnormal psychology in order to do it. It may take its illustrations from any field of mental activity. It should, however, be prominently humanistic in its trends and be primarily a psychology of motives rather than of reaction times. I do not say that a psychology of reaction times has no place. It has, but it is a refinement of the psychology which is of advantage to the medical student and not a precondition for such a psychology.

The last few years of psychiatry, which I like to call the Renaissance period, have brought about the necessity for the kind of psychology I advocate — a psychology of human beings and human motives, and very much of it might readily be called a common-sense psychology which does not require the learning or erudition of the laboratory investigator to understand its general principles. If the human mind is looked on as a reacting organism developing reactions of defense and compensation precisely as the body develops compensations and defenses to disease, many of the otherwise obscure manifestations of the disordered mind can be explained. The patient with hip disease develops a compensatory curve of the spine so that his center of gravity is not disturbed. The patient with diphtheria develops antibodies to antagonize the invading toxins, and so the patient with mental disease presents to us a series of reactions that are defensive and compensatory in character. There are two patients to-day in the Government Hospital for the Insane who have committed murder. Both of them have developed the delusion that the person they killed is not in fact dead. It does not require any recondite psychology to understand how the development of such a delusion enables them to live in comparative peace of mind. The delusion defends them from the reality; their psychosis offers them a compensation for the "slings and arrows of outrageous fortune."

Psychiatry is beginning to-day to look on the psychosis not as a disease, but as an expression of the type of reaction of the individual to inimical conditions. The delusion is not the disease; the delusion is the outward expression of the repair process — the process that is endeavoring to bring about harmony and balance in the patient's mental make-up so that he may live at peace with himself. The psychosis, not infrequently, at least, is the resort of the individual from a world of reality in which he cannot live. The patient builds up, by means of his delusional system, an artificial world to which it is possible to adapt himself — in which he can live.

This, which I have briefly illustrated, is the kind of psychology with which the college student should enter on his life-work. He should be able to see the operation of motives in his patients, to understand the mechanisms by which their wishes and desires express themselves, and to place himself, therefore, in a position of understanding with reference to their attitudes. This is vastly more important than even to have worked at great length over the association experiments. If he knows this he is able to have a comprehensive grasp of the human mind and realize how it works as a whole, to take care of the human mechanism in its endeavor to bring about an adjustment to the environment, and to mold that environment to suit its desires. He will then be in a position if he so chooses to go further on the path, to make special investigations of special phenomena and to apply in detail the laboratory methods of refined science.

In the short space at my disposal it is not possible, nor have I tried, to outline the kind of instruction that I think would be best adapted to these ends. I only desire to emphasize the necessity for the study of mind as a

preparation for the practice of medicine: I only aim at creating a recognition of this necessity. The details can be approached at any time; they are a secondary consideration to the general principle and are after all only details. And finally, it must not be forgotten that the vogue of a great deal of pseudomedicine, the "patent" remedies, the half-baked pathies, the hosts of charlatans and mountebanks are thriving in a department of medicine that the legitimate practitioner has simply and plainly neglected, and they are thriving to no small extent because of that neglect. The good results that they obtain — and no one can deny that they do obtain good results sometimes — are obtained by the effect of their practices on the minds of their patients, and all this is going on while the general practitioner refuses to busy himself with such matters as psychotherapy and the medical schools neglect to teach the structure and functions of the mind. Here is a field in which medicine has neither availed itself of its opportunities nor measured up to its responsibilities, and until it does both of these it can ill afford to throw stones.

THE RELATION OF CHRONIC GONORRHEA AND OTHER INFECTIONS IN THE URINARY TRACT TO JOINT DISEASE *

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As a rule gonorrhea is a local disease, but in a small percentage of cases the germ or its toxins escape through the circulation and the lymphatics, and a systemic condition ensues. Metastatic gonorrheal inflammation attacks, among many other structures, the joints in perhaps 2 or 3 per cent. of all cases of systemic infection. The condition is sometimes due to the invasion of the joints by the gonococcus alone, sometimes to a so-called mixed infection with pyogenic bacteria or their products.

Gonorrheal arthritis is more common in men than in women, the latter seeming to be almost immune to this complication, which is supposed to be due to the fact that the vagina and not the urethra is the usual seat of gonorrhea in the female. This, however, is only a supposition. We find the initial infection at least as often in the female urethra as in the vagina.

I believe the cause of this apparent immunity is to be found in the difference of the structures of the female urogenital tract and, secondly, to the lesser chance of traumatic injury to the urethra and vagina in the course of treatment of a gonorrhea. In the light of our present knowledge of the etiology of gonorrheal metastasis, it requires either local retention with a subsequent trauma of some sort or an abrasion of the protecting epithelium in order to allow the escape of the bacteria or their toxins into the blood-vessels or the lymphatics. Such a trauma may be a mechanical one, but a sexual excitement or a congestion from any source may serve the same purpose. Epithelial lesions may be produced by instrumentation, but the invasion of the deep urethra or the vesical neck and the trigone by the gonorrheal process leading to more or less congestion and bleeding is sufficient to expose smaller blood-vessels and offer an escape of the bacteria and their toxins. Neither endourethral instrumentation nor the invasion of the posterior urethra and the trigone usually occurs in the

earliest stage of the disease and, therefore, metastatic arthritis is rarely observed at this stage.

At first glance it would seem that, in the few cases in which metastasis in the joint has taken place in the first week of the gonorrheal urethritis, a personal idiosyncrasy has existed and in support of this theory cases are quoted in which certain individuals have remained well between gonorrheal attacks, but had new attacks whenever a supposedly new urethral infection was acquired. I have repeatedly observed such cases, but I am not able to accept the theory of idiosyncrasy, since close investigation proved conclusively that the patient in question had the same case of gonorrhea from the first attacks of urethritis to the last one. True, they had it in a more or less latent condition, interrupted by an acute or subacute flaring up, which latter when appearing after a sexual intercourse was considered as evidence of a new infection.

The very few cases recorded in the literature in which gonococcus pyemia appeared within a few days after a first infection could be classified as due to an idiosyncrasy, but is it not possible that lesions like those mentioned above might have opened the gate for the systemic invasion? I have particular reference to lesions caused by irrigation under pressure. Otherwise we could hardly understand why there is such a small percentage of it, considering the large number of gonorrheal infection, and particularly so very few cases occurring in the early stage of the disease.

More recently the idea is gaining ground that the source of infection of the joints in the male adult is chiefly to be found in retention foci of the urogenital tract from the anterior urethra up into the renal pelvis. Such foci are established in the follicular apparatus of the anterior urethra, in the glandular tissue of the prostate, in the Cowper gland and in the seminal vesicles.

While gradually the necessity of an examination of the prostate in an unduly prolonged urethritis and its complications became recognized, very few have yet appreciated the importance of the seminal vesicles as a contributing factor, and only occasionally even the specialist thinks of palpating the Cowper glands in these cases. And just the retention of septic material in the seminal vesicles is responsible for a very large proportion of chronic ever-recurring urethral discharges, relapse of epididymitis and cystitis and metastasis in the joints and other tissues.

In some of these cases there is a persistent but scant urethral discharge which increases on provocation of some kind and decreases rapidly with or without treatment. In others the discharge ceases entirely under local treatment, but reappears within a few days after treatment is discontinued.

Again, in others there is no visible discharge, but the urine at times contains shreds of different size and shape; at other times there are no shreds present; on very close inspection a few minute flocculi are seen floating in the otherwise clear urine. The shreds very shortly drop to the bottom of the glass, which indicates pus and permits the conclusion of the presence of pyogenic germs. The comma-shaped shreds originate in the prostatic follicles and the seminal ducts from which they are expelled by the terminal contractions of the circular muscle-fibers.

In some cases a more or less severe cystitis or epididymitis of short duration, but repeatedly recurring, is observed.

If an articular swelling should occur in the absence of a visible urethral discharge, perhaps months or years after a urethritis was apparently cured and had long

* Read at the meeting of the North Central Branch of the American Urological Association, St. Louis, Feb. 6, 1912.