Disorders of the male sexual organs / By Eugene Fuller.

DISORDERS

OF THE

MALE SEXUAL ORGANS.

BY

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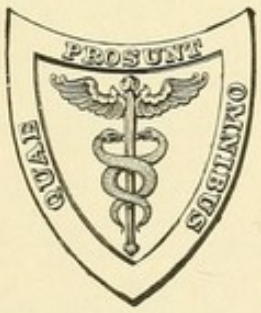

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PREFACE.

CONSIDERING the importance of a properly regulated sexual function to the happiness and well-being of man, it is remarkable that hitherto so little scientific study and attention should have been devoted to investigations upon that subject. It has been and still is quite customary for the medical man, after listening to the recital of the complaints of one suffering from a sexual disorder, to tap him on the head, with the remark, "Here, my man, here is the seat of your trouble." In a certain percentage of cases such a diagnosis may be correct; if it is, however, it is of the "snap" variety, and whether it be correct or at fault, it rarely serves to impress the patient, who goes away either feeling that his case has been slightingly considered, or that his adviser is possessed of little knowledge. The rich harvest reaped by advertising mediums and quacks in this department is in great measure due to the unsatisfactory manner in which these cases are handled by the regular profession. One of the aims of this work is to show that pathological and physiological factors in connection with the apparatus actively employed in the sexual act are oftentimes the direct causes for sexual and other allied dis-

turbances. In fact, it seems probable that the factors just mentioned prevail in the majority of these cases, psychological and neurotic conditions, the latter chiefly of a reflex nature, being in the minority. The psychological side of this question, the side in fact which represents by far the smallest percentage of cases, is the only one which has been thoroughly investigated. Able writers, among them Hammond, Tarnowsky, von Krafft-Ebing, and others, have so forcibly represented their ideas from the standpoint of the alienist that the general reader, in the absence of evidence in other directions, has naturally concluded that their writings in large measure cover the entire subject.

The neurotic standpoint has been considered chiefly by Ultzmann in his work on *Genito-Urinary Neuroses*, and by Guyon in his article on "Sexual Neurasthenia." These articles, although of much interest, and representative of accepted theories, are, as it will be my endeavor to demonstrate, really very defective in that practically all sexual disturbances, aside from psychological ones, are classed as neurotic.

Pathological and physiological factors are ignored, although Ultzmann at the end of his book does allude to Trousseau, who held as an undemonstrated theory that pathological conditions of the seminal vesicles accounted for the symptoms in some of those cases.

My opinion is that trouble located in the sexual apparatus, and primarily, at least, largely independent of nervous conditions, is the chief cause of sexual disturbance in the male; and that the various neuroses and

psychological conditions stand in the order named as other causes.

It, therefore, follows that every case of this nature should be carefully examined from the three different standpoints enumerated, and a differential diagnosis given.

Before attempting to approach understandingly the main issue, it is necessary thoroughly to understand the anatomy of the region under consideration; and as the general anatomical works have not paid sufficient attention to this particular, it has seemed well to devote a chapter to that subject, in which, among other things, the mechanism of ejaculation is considered.

I am greatly obliged to Dr. James Ewing, of this city, for his report on the "Histology of the Seminal Vesicle and the Vas Deferens," which report is annexed to the chapter on Anatomy.

In forming my plans and in collecting my material for this work I have many thanks to give to Dr. E. L. Keyes, with whom I have been associated for many years.

109 E. Thirty-fourth St., New York,
February, 1895.

CONTENTS.

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CHAPTER I.

ANATOMY.

In order thoroughly to understand the subject about to be considered, a systematic study of the vesico-rectal anatomy of the male is essential. The term vesico-rectal anatomy as used here is intended to apply, first, to the relation which the bladder bears to the rectum, and secondly, to a consideration of the important structures which are attached to or go to make up the vesical neck. These structures in great measure may be said to occupy the recto-vesical space. No attempt will be made to study the special anatomy of the bladder or of the rectum, or to consider the general relations which these organs may bear to the pelvic structure or to the abdominal organs.

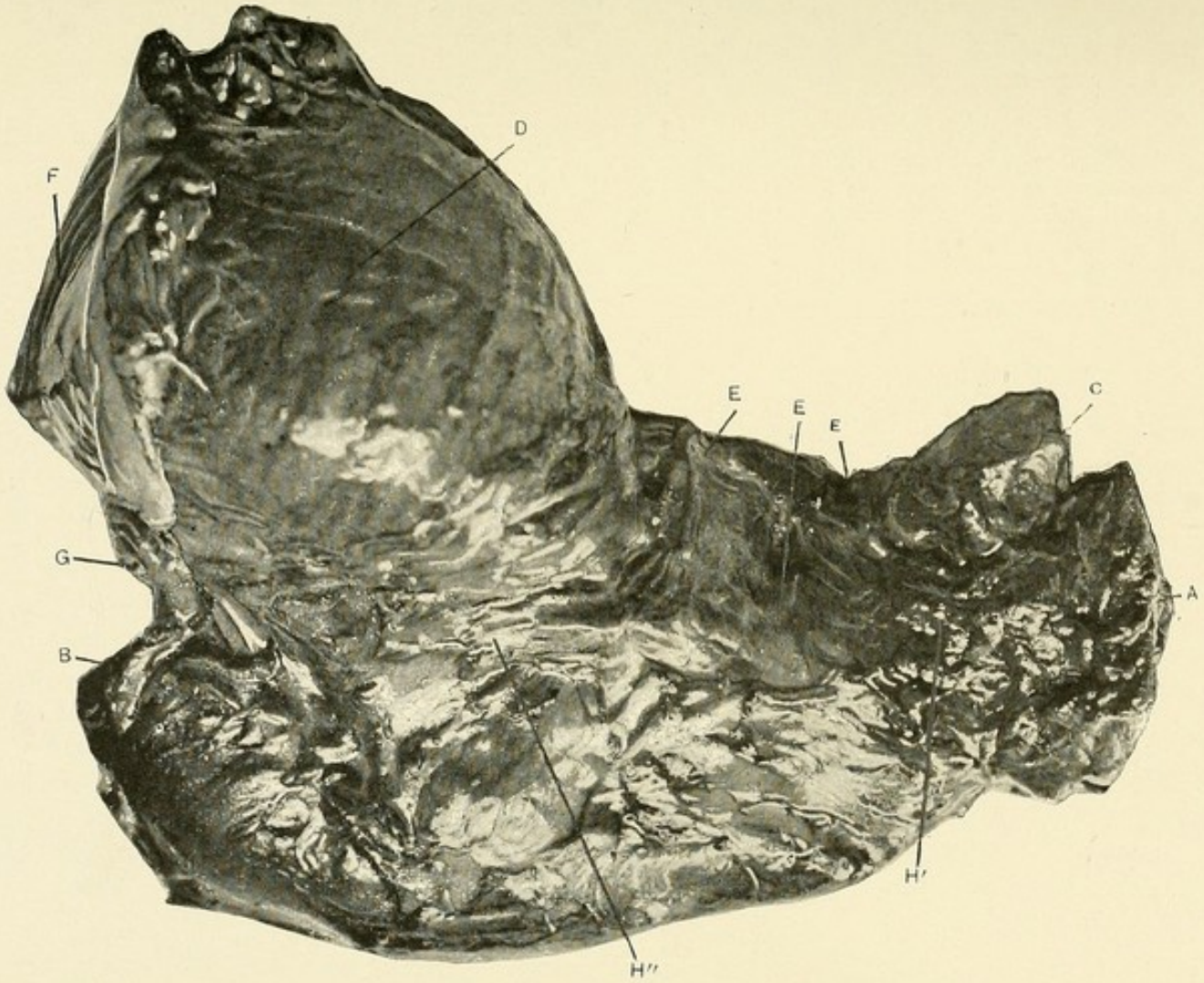
Should one wish to acquaint himself with the medical literature on this subject, including some reference to the embryology and comparative anatomy of the seminal vesicles and the vasa deferentia, he will find such information, together with a full list of references, in Dr. O. Guelliot's excellent work *Des Vésicules Séminales, Anatomie et Pathologie*, Paris, 1883, A. Coććoz, editeur.

Under the first heading is included the study of the fascia enveloping the bladder and rectum in common,

its important venous plexus, and the reflexions of the peritoneum. Under the second heading are included the vasa deferentia, the seminal vesicles, the prostate, and the deep urethra, reference being paid to the relation which these different parts, especially the vesicles and the prostate, bear not only to one another, but also to the bladder proper and the rectum. As none of the anatomical writers have apparently devoted themselves sufficiently to these particulars, it was found necessary to make numerous dissections to illustrate special points. The most important of these dissections have been photographed and reproduced here, so that exactness and correctness of statement may be assured. These pictures have been arranged sequentially, so that a successive study of them together with the accompanying description may lead the reader on to a thorough understanding of the subject.

Plate I. This represents a dissection *en masse* of the entire visceral contents of the male pelvis. This mass, as is well seen in the engraving, is securely bound together by a dense fascia of its own, which is in its turn connected by a loose fibrous meshwork to the fascia propria, which lines the cavity of the pelvis. It is in this loose fibrous meshwork that extravasated fluids burrow so freely. The figure itself is about one-half the natural size, with the rectum and bladder both almost collapsed. A represents the anus, and B the inner end of the gut, section having been made just above the peritoneal deflection (see Plate IV.). The space between A B shows the rectum in a state of contraction. C is the urethra in its membranous portion. D is the bladder. E is the prostate. (The three radiating lines are used to designate the extent of that organ.) F is the peritoneum. G points toward the space lined by peritoneum between

PLATE I.



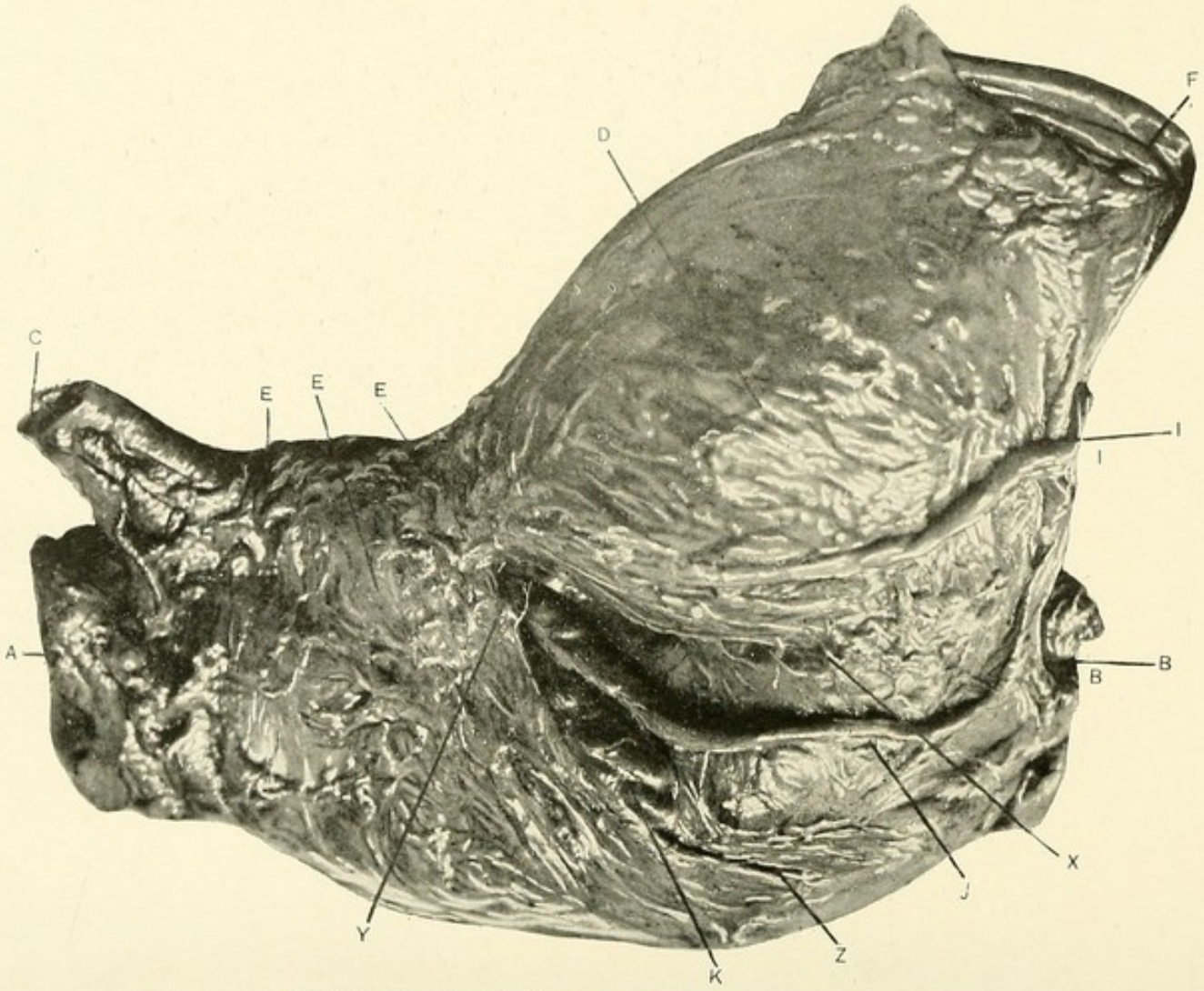
Visceral contents of the male pelvis—side view.

the bladder and rectum (see Plate IV.). H′ H″ represent respectively the anterior and posterior limits of the pampiniform plexus, which important group of veins consists chiefly of two lateral plexuses, one on either side of the prostato-vesicular region entwined in the meshes of the general enveloping fascia. The largest veins lie in the crease between the prostate and rectum. These lateral groups of veins communicate with one another quite freely below around the rectum and above around the urethral structures. There can, however, be but little direct intercommunication, through the recto-vesical space, between the prostate and the rectum, as a later dissection (Fig. 1) shows a lymph-space in that region and an absence of large veins. In removing this dissection from the pelvis the firm attachments above and below are the only ones to offer any real resistance, the intermediate space occupied by the loose fibrous meshwork being most easily broken down. This loose meshwork allows of great variation in size of the pelvic contents. The attachments above, although firm, are very elastic, and are made up of the peritoneum and the sub-peritoneal fascia, which last forms a connection with the fascia propria of the pelvis. Below the attachments are firm and strong, and those connecting the lower prostatic region with the pubic arch are especially dense and unyielding. The attachments of the rectum, which are partly muscular and partly fibrous, have already been carefully investigated by numerous anatomists, and do not come within the scope of this work.

Plate II. represents the other side, the left, of Plate I. Here the outer layers of the enveloping fascia have been dissected off, thus bringing into view more distinctly the contour of the different organs. The pampiniform plexus lies in the outer layers, and consequently no

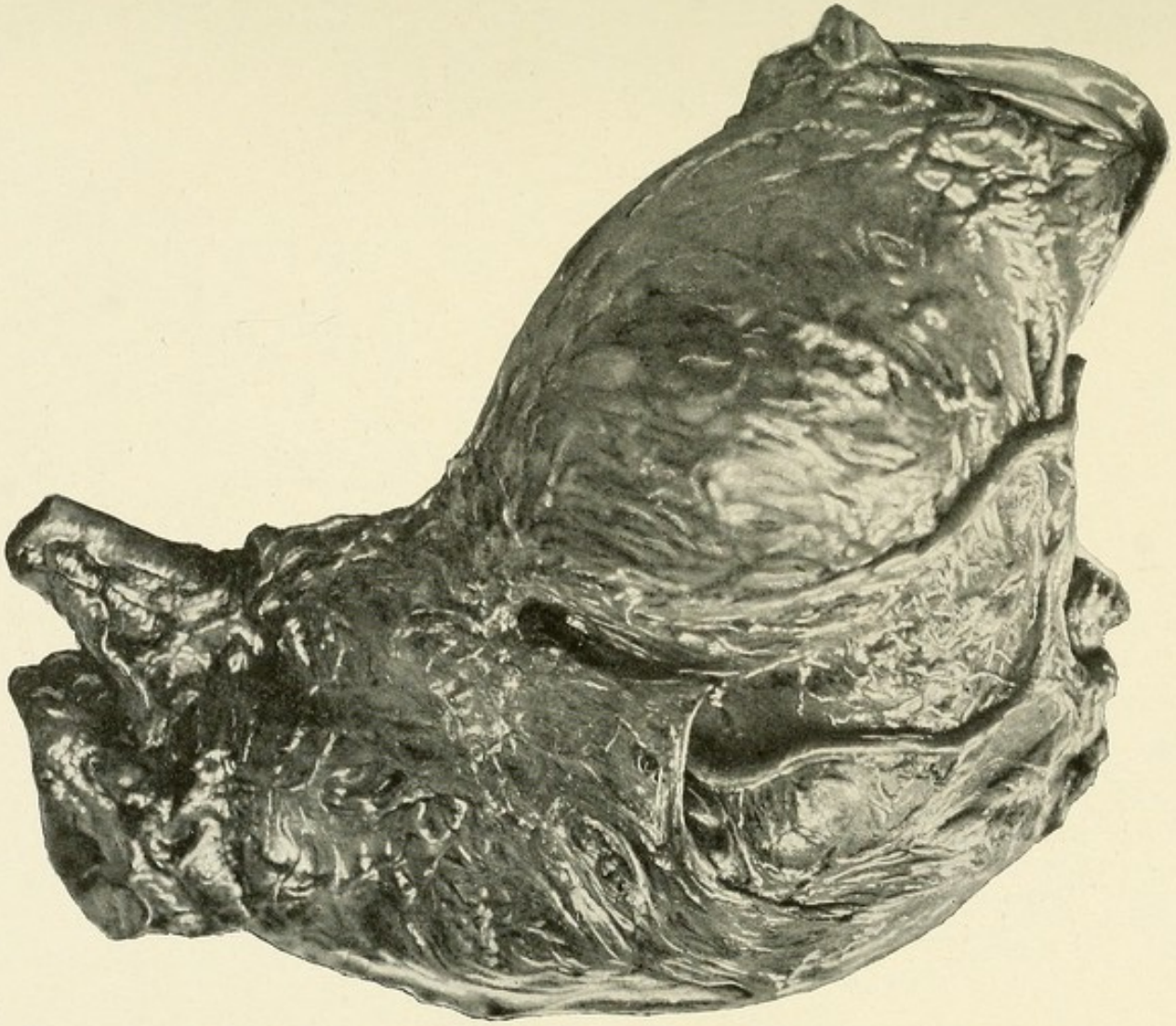
longer appears in this picture. A, B, C, D, E, and F, represent in Plate II. the same as in Plate I. I is the left ureter, J the left vas deferens, K the left seminal vesicle. The triangle X, Y, Z, exposing the vas deferens and the seminal vesicle, has been formed by splitting apart the fibres of the enveloping fascia, which in this region are very firm. In the natural order of things, therefore, the upper arm of the triangle, X Y, should be in fibrous contact with the lower arm, Z Y, the vas deferens and the vesicle being hidden from view. It will be seen that the enveloping fascia is thin and delicate over the bladder proper, while it is dense and very strong over the prostate and over the prostato-rectal space. Inspection will, in fact, show that this fascia is most dense over the prostate and very adherent to its muscular fibres. It is from this portion of the fascia that the strong suspensory ligament connecting with the pubic arch has its insertion. It is well to state here, for the sake of clearness in alluding to the prostate, that that muscular body, as will be shown later on, entirely encircles the vesical neck, and does not occupy simply a position below it, as seems to be commonly supposed. Radiating from the dense fascia covering the prostate are numerous strong fibrous bands extending backward and downward, thus binding the prostatic region to the bowel much more firmly than to the bladder proper. Filaments from these fibrous bands on either side are given off, which envelop each seminal vesicle in a fibrous sheath something like the covering of a cocoon. Any pull brought to bear on these radiating fibrous bands, as it can be seen, would occur during a muscular contraction of the prostate, would stretch and consequently narrow the sheath containing the seminal vesicle, thus giving that sac a squeeze. This point will be referred

PLATE II.



Visceral contents of the male pelvis—side view.

PLATE III.



Same as Plate II. with lower arm of triangle, X, Y, Z, drawn upward with a cord.

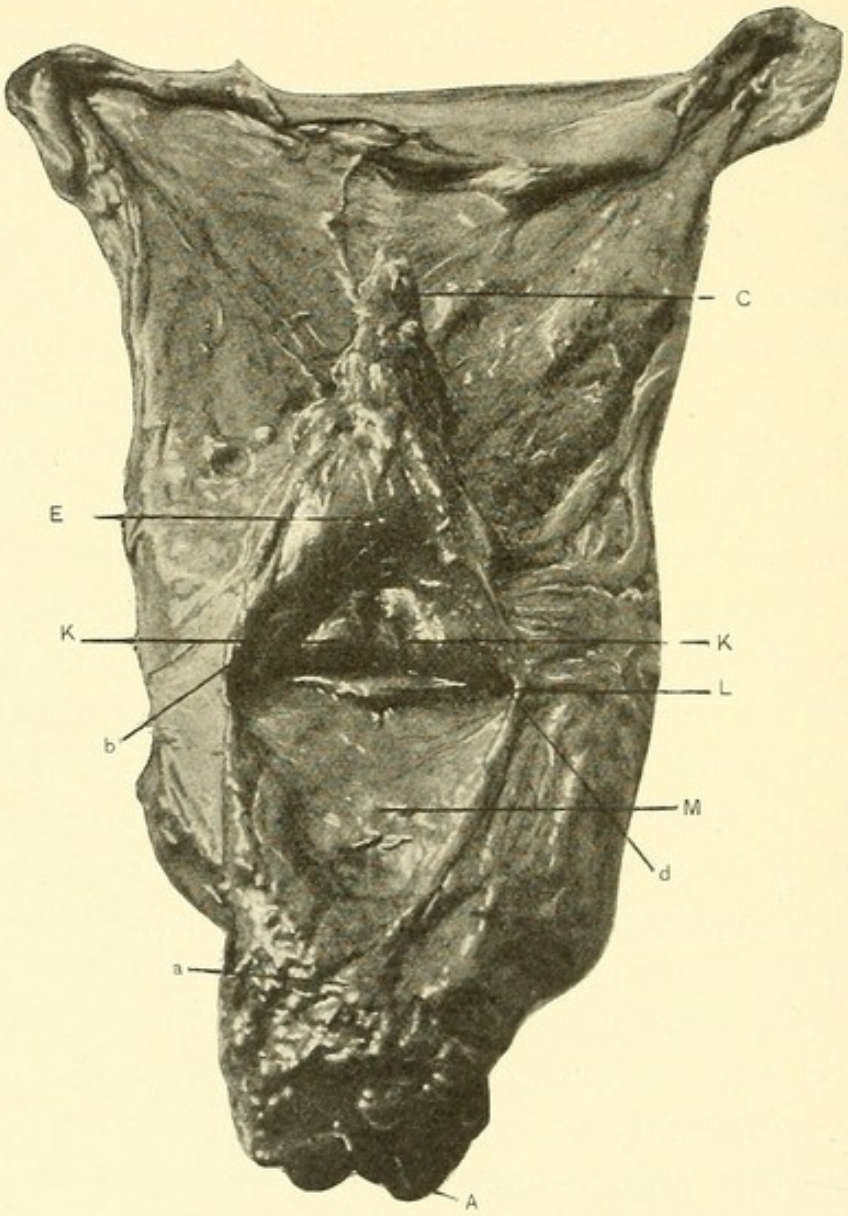
to later on in considering the mechanism of ejaculation. In this figure the exposed seminal vesicle seems to lie below the vas deferens. This is due to the split, X Y Z, made in the fascia. When the edges of this split are drawn together the vesicle will be found to have been drawn up and to lie outside of the vas deferens. In Plate II., also, the loose muscular structures and fat about A and C have been dissected off, exposing the internal sphincter and the corpus spongiosum.

Plate III. is a rephotograph of Plate II., the only difference being that a cord, the insertion of which can be seen, has been tied to the middle of the lower arm, Z Y, of the triangle, X Y Z, and gentle backward traction applied so as largely to obliterate the angle of the triangle by bringing up the proximal half of the lower arm of fascia to its corresponding upper arm. This is done to show the reader more clearly the strong fibrous bands of fascia which radiate from the prostatic sheath as well as their true direction. It would, perhaps, also have been well to have attached another cord to the end, Z, of the lower arm, in order to have shown the full length of these fibrous bands; but, with the explanation at hand, such was hardly thought to be necessary.

Fig. 1 shows the neck of the bladder dissected off from the rectum and then drawn upward, bringing plainly into view the V-shaped anterior recto-vesical space sufficiently to expose the entire lower portion of the prostate and the base of both seminal vesicles. A represents the rectum, C the urethra, E the lower portion of the prostate, K K the bases of the seminal vesicles, L the wedge-shaped fold of firm fascia, which has been cut through below the prostate and pulled downward, thus exposing to view the bases of both seminal vesicles. M represents the lower surface of the

triangular space, *a b d*, the upper surface of which is made up of the fascia covering the lower portion of the prostate and is represented by the triangle *b* C *d*. The

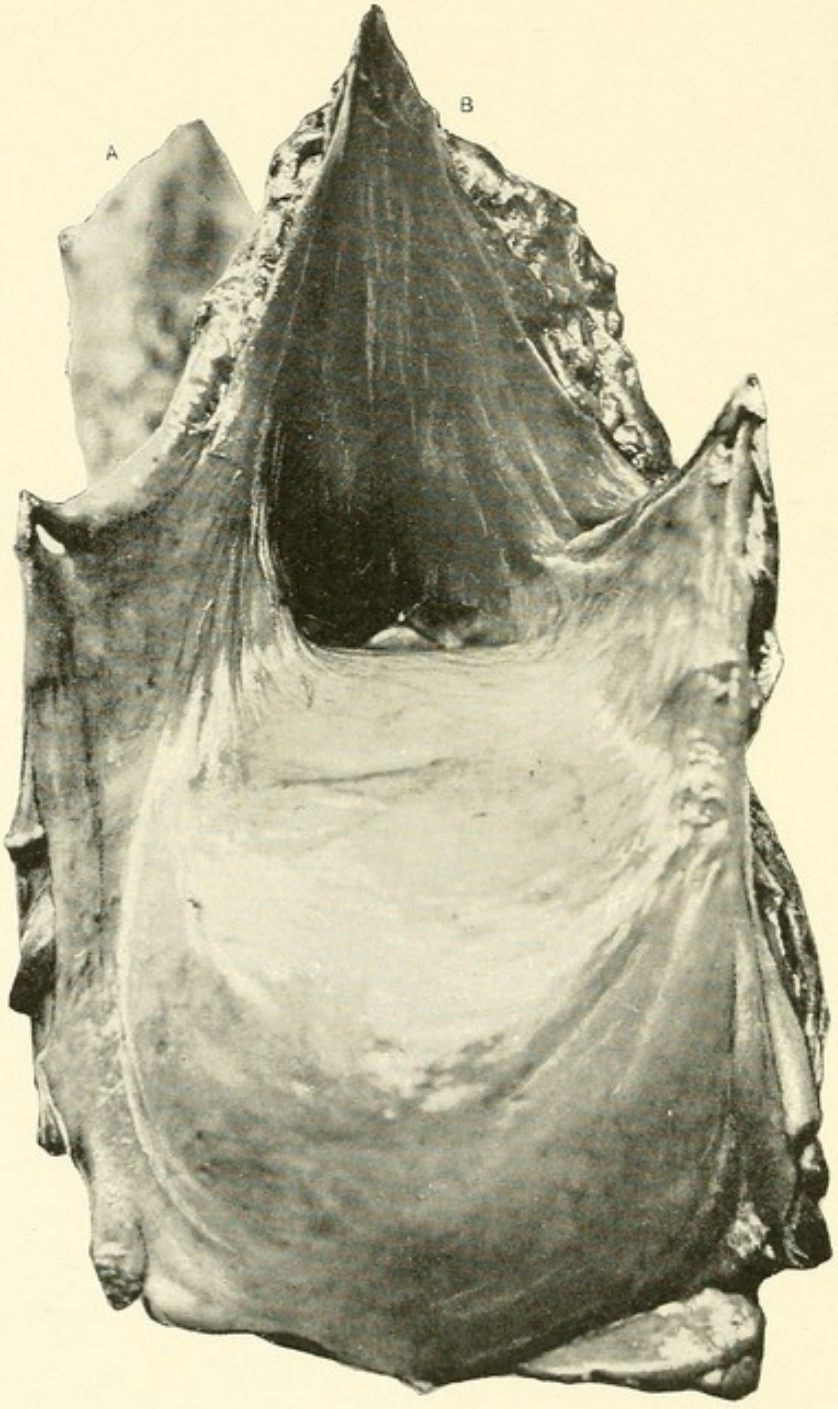
FIG. 1.



Showing the lower portion of prostate and base of the seminal vesicle.

sides of these two triangles are the cut edges of the general enveloping fascia. The seminal vesicles are wholly excluded from this space, although in the picture the fascia excluding them has been cut through in order

PLATE IV.



Showing the deflections of the pelvic peritoneum.

to show both their positions and the posterior border of the prostate. This triangular area is really a lymph-space, allowing great mobility to the prostate with reference to the rectum. There is no venous plexus in connection with the floor or roof of this space, although in cutting through the general enveloping fascia forming its lateral borders, a necessary procedure in making this dissection, numerous large veins going to make up the pampiniform plexus are wounded. A knowledge of this dissection is very important in connection with the operation advocated by Zuckerkandl for the extirpation of the seminal vesicles, a subject which will be considered later on.

Plate IV. is to show the peritoneum in its connection with the pelvic viscera. A is the anus, B is the rectum cut across just above the point of peritoneal deflection. The bladder is moderately distended. At the bottom of the vesico-rectal peritoneal cul-de-sac, and to the right, as appears in the figure, a pin is to be seen stuck through the peritoneum. The pin penetrates just above the apex of the left seminal vesicle. This shows that, although in this dissection the peritoneum at the deepest portion of the cul-de-sac reaches down to the vesicle, still that it is not deflected over that organ, and cannot consequently be considered one of its coverings. Comparing this dissection with others, it appears that the peritoneum rarely comes in closer contact with the seminal vesicle than is shown in this figure, while in some instances, as will be seen in considering Plate V., the cul-de-sac is not deep enough to allow of any peritoneal contact.

Plate V. Here B represents the rectum cut across above its peritoneal deflection. G G point into the recto-vesical peritoneal cul-de-sac, which is represented

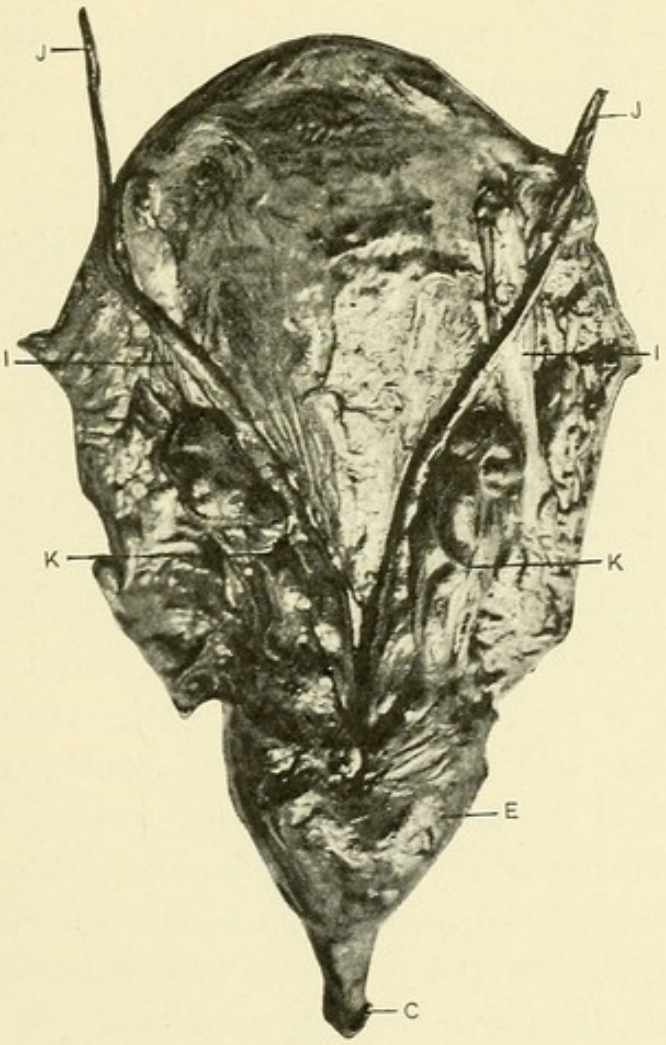
in a state of moderate distention, it being packed with cotton-wool. D is the posterior wall of the dependent bladder, which has been dissected off from its peritoneal covering, F, and from the enveloping fascia, E′ E′, which last has been cut away from the sides of the bladder and then dissected off posteriorly. E E are the posterior lateral borders of the prostate. The figure shows, especially on its left side, very distinctly how intimately the muscular fibres of the prostate at E are blended with bands of the enveloping fascia at E′. We have already seen in Plates II. and III. an outside view of this same blending. It can also be seen to a certain extent how each vesicle lies imbedded in a fibrous sheath (allusion to which has already been made in studying Plate II.), which sheath is attached to and made up of the firm bands of the enveloping fascia which radiate backward and downward from the prostatic covering. Two cords attached to the upper cut edges of the elastic enveloping fascia, and exerting moderate lateral traction, are sufficient to roll back the fibrous sheaths that have already been dissected off the vesicles, and consequently to expose the anterior surfaces of those organs which otherwise would have been hidden from view in a dissection such as this one. I is the right ureter. G′ shows the bottom level of the vesico-rectal peritoneal cul-de-sac. On each side the limits of this cul-de-sac are marked by the vasa deferentia. So in this dissection the peritoneum does not come in contact at all with the seminal vesicles. Another point which this figure shows is the slightness of the attachment of the bodies of the seminal vesicles to the posterior wall of the bladder, and at the same time the firmness with which they are bound to the prostate and to the sheath of the rectum, thus allowing

PLATE V.

Showing the vesicles in their fibrous sheaths, the bladder having been dissected off and turned downward.

them little or no motion independent of the prostate. This is important, for otherwise, if the body of the vesicle could move independently of the prostate there would result a bending of the ejaculatory ducts just posteriorly to their entrance into the prostatic body such as would necessarily interfere with the ejaculatory act.

FIG. 2.



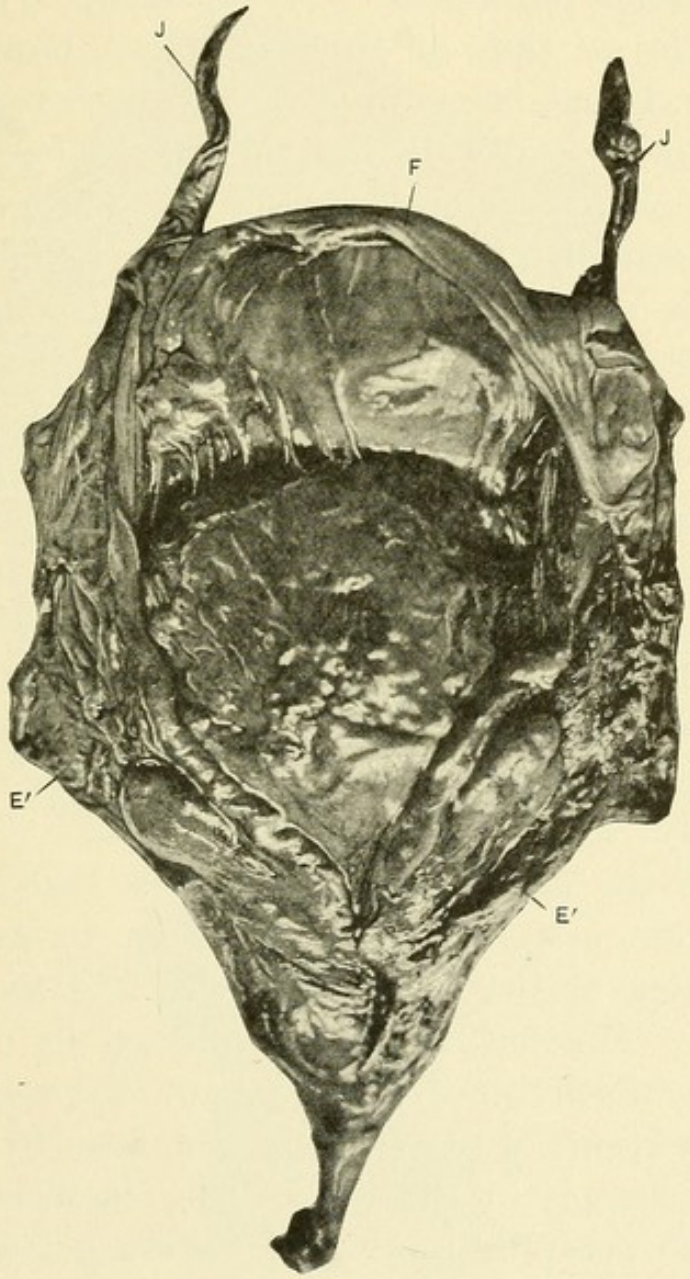
Posterior wall of the bladder showing vesicles and prostate.

Fig. 2 (much reduced in size) shows the posterior wall of the bladder and a posterior view of the seminal vesicles and the prostate, all the enveloping fascia having been dissected off. C, as usual, marks the urethra,

E the prostate, K the seminal vesicle, I the ureter, and J the vas deferens. The posterior V-shaped vesical space between the diverging vasa deferentia, through which recto-vesical puncture for relief of retention of urine is sometimes made, is very distinct. The so-called lateral lobes of the prostate show up well together with the deep intermediate sulcus, in the bottom of which are the two vasa deferentia, which here come so closely together that they touch. It will be seen in examining the lateral lobes of the prostate that they have no defined posterior border, but that the muscular fibres which compose them extend backward and become so blended with the musculo-fibrous tissue constituting the lower portion of the seminal vesicles that it is impossible to say just where one ends and the other begins. If these muscular bands which extend back from the prostate to the wall of the vesicle are observed carefully, it will be seen that their fibres are so arranged that when a prostatic muscular contraction takes place there would be exerted a strong pull on the lower half of the vesicle, which pull would be sufficient, if coincident with a tightening of the fibrous sheath of the vesicle, such as we have seen in Plates II. and III. would result from a contraction of the lateral and upper portions of the prostate, to give the whole seminal vesicle a strong squeeze. It is reasonable to suppose when such a muscular contraction takes place in the prostatic body, that it is general in character, thus exerting pressure over the whole area of the vesicle. The posterior lateral lobe of the prostate is evidently a grouping of muscular fibres arranged especially to exert traction on the corresponding seminal vesicle. Subsequent figures, especially Plate VI. and Fig. 7, as will be seen, support this statement. Examination will show that the contour of the seminal vesicle

is not regular, such as one would expect if the interior consisted of a single oblong chamber, but that it is irregular, presenting an appearance similar to that of an

FIG. 3.



Posterior wall of the bladder, showing the vesicles in their fibrous sheaths.

oblong bag into which had been crowded a flexible cylindrical body. The reason for this appearance will be evident later on in studying Fig. 7. The distal por-

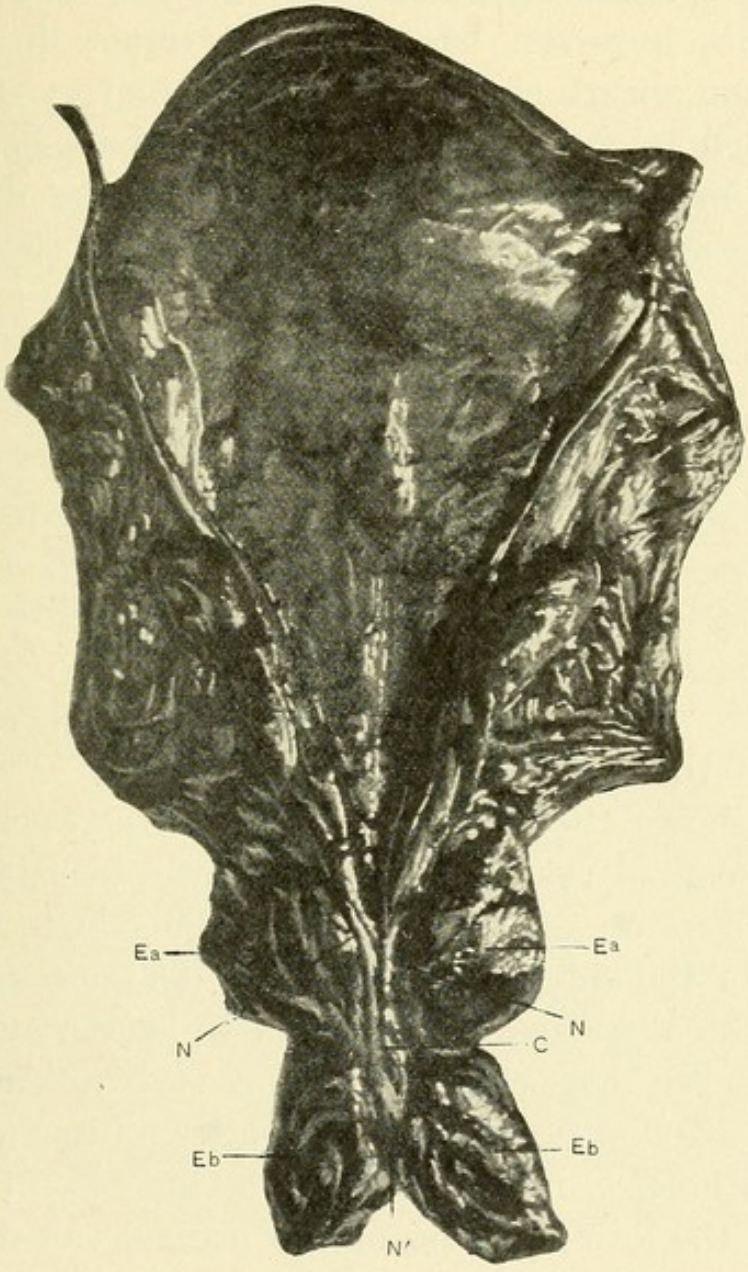
tions of the vasa deferentia, as can be seen, are considerably smaller in circumference than the proximal portions where they converge. Attention will again be called to this point later on.

Fig. 3 (much reduced in size) represents a dissection quite similar to that of Fig. 2. Here, however, the peritoneum, F, has been only partially dissected up from the posterior vesical wall and the vasa deferentia, J J, have not been dissected free from it. The general enveloping fascia also has not been removed so freely, and at E′ E′ it is plainly seen showing its intimate attachment to the prostate. Its connection with the bodies of the vesicles does not appear here, as these organs have been dissected from their fibrous sheaths. It is well to examine the fascia, E′ E′, in this figure, in connection with the same fascia, E′ E′, in Plate V. In Fig. 3 the fascia has been cut through behind the seminal vesicles, while in Plate V. the cut has been in front of them. The vertical furrow in the base of the prostate is due to an accidental cut into the muscular substance of that body.

Fig. 4 is the same as Fig. 2, except that in Fig. 4 the dissection is completed so as fully to expose the lower portions of the seminal vesicles and the ejaculatory ducts. This has been accomplished by dissecting off the musculo-fibrous attachments of the prostate from the lower portions of the vesicles, and then, by splitting across transversely in the line of the ejaculatory ducts down to the prostatic urethra, the lower portion of the posterior prostatic body from the upper portion. The free dissected portion of the prostate is then rotated vertically downward. C represents the under portion of the floor of the prostatic urethra in the neighborhood of the caput gallinaginis, on either side of which the ejacu-

latory ducts communicate with the urethra. Ea Ea represent the anterior section of the prostatic lobes, Eb Eb the posterior section, which has been rotated from

FIG. 4.



Posterior wall of the bladder, showing the ejaculatory ducts.

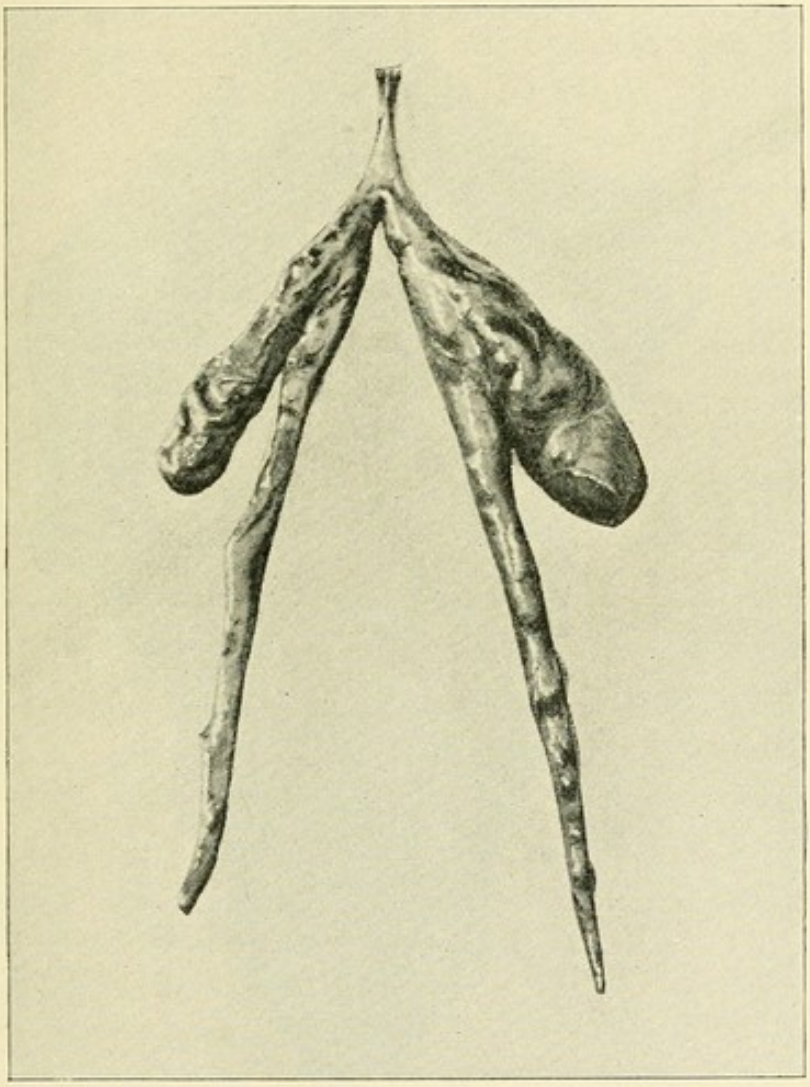
Ea Ea, with C as an axis, 180° downward. The seminal vesicles in their entire length, the junction of the vas deferens with its vesicle and the ejaculatory ducts

lying parallel and in close apposition, appear quite plainly. The ejaculatory ducts, although entirely independent of one another, are firmly bound together in a common fibrous sheath, which has been largely dissected away in this figure in order to show their individuality. This sheath, however, has been left intact in Fig. 5. The common sheath containing the ejaculatory ducts is not attached laterally to the muscular substance of the prostate, but lies free in a lymph-space the walls of which consist of another and larger fibrous sheath incorporated into the substance of the prostate. This larger sheath has been called the infundibulum of the prostate. N N show the roof of the infundibulum, and N′ shows its floor. The walls of the ejaculatory ducts are very elastic. It is thus evident that when the muscular fibres of the prostate contract, causing a direct pull on the body of the vesicle, that the length of the ejaculatory ducts, by reason of their lying free in a lymph-space, is shortened, their walls relaxed, and the capacity of their canals increased.

Fig. 5 shows the posterior view of the vasa deferentia, the seminal vesicles and their ducts, together with the small section of the urethra which includes the openings of the ducts. The left vas deferens and vesicle are normal in size and natural in appearance; the right, however, happens to be in a state of atrophy, which condition will be alluded to later on in considering the pathology of the parts. The increased circumference of the lower portion of the normal vas deferens over the upper distal portion is clearly brought to view. In this lower portion, also, the cord is not cylindrical, but is somewhat flattened on its anterior and posterior surfaces. In this figure the common sheath enveloping the ejaculatory ducts has been left intact, so bind-

ing them together as to give the appearance of a single duct rather than two. Each duct has been catheterized through its urethral opening by means of a bristle, which, however, does not appear in this figure. Each bristle passes upward and outward, entering the cavity

FIG. 5.

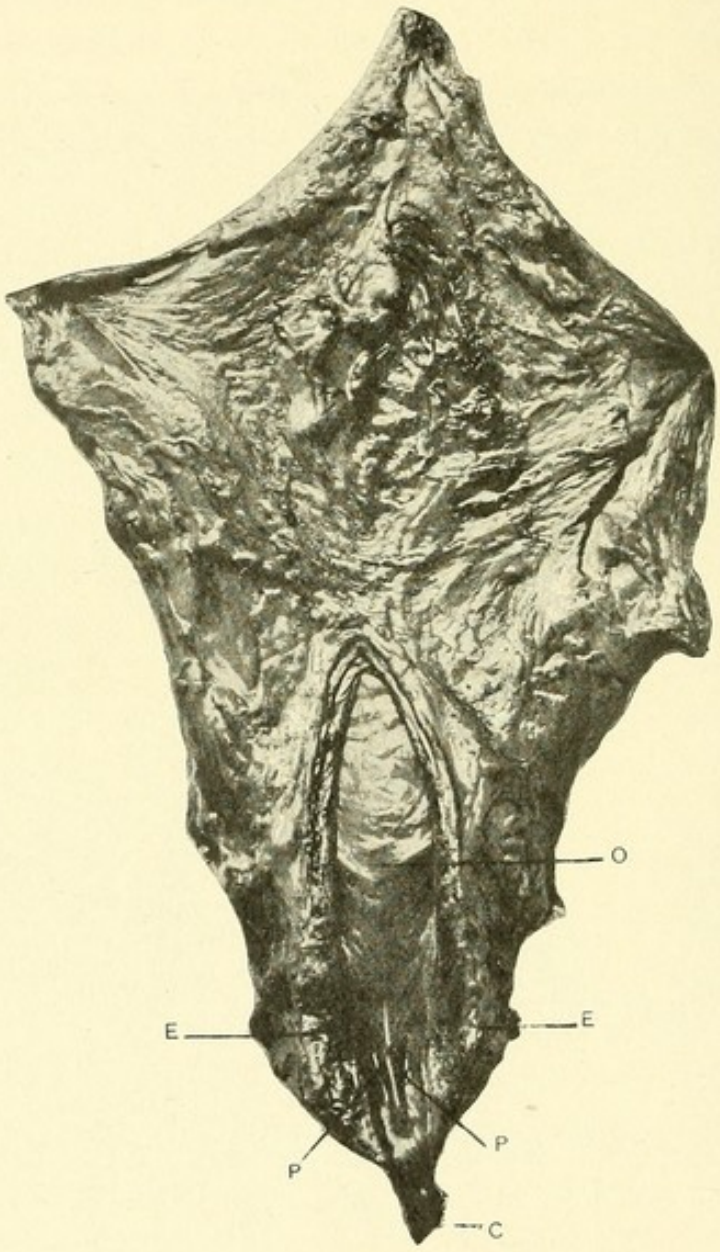


The vasa deferentia, the seminal vesicles and their ducts.

of the corresponding seminal vesicle, and by no amount of manipulation was it found possible to make one of these bristles enter the canal of the vas deferens. Fig. 7 will also show that the bristles by entering the cavity of the seminal vesicles took their natural course.

Fig. 6 is chiefly to show the floor of the prostatic urethra. To accomplish this a cut has been made through the roof of the membranous and prostatic

FIG. 6.



The floor of the prostatic urethra.

urethra, and extending backward through the lower portion of the anterior bladder-wall. The cut edges have then been moderately separated. O represents the

PLATE VI.

A vertical longitudinal section through the vesical neck.

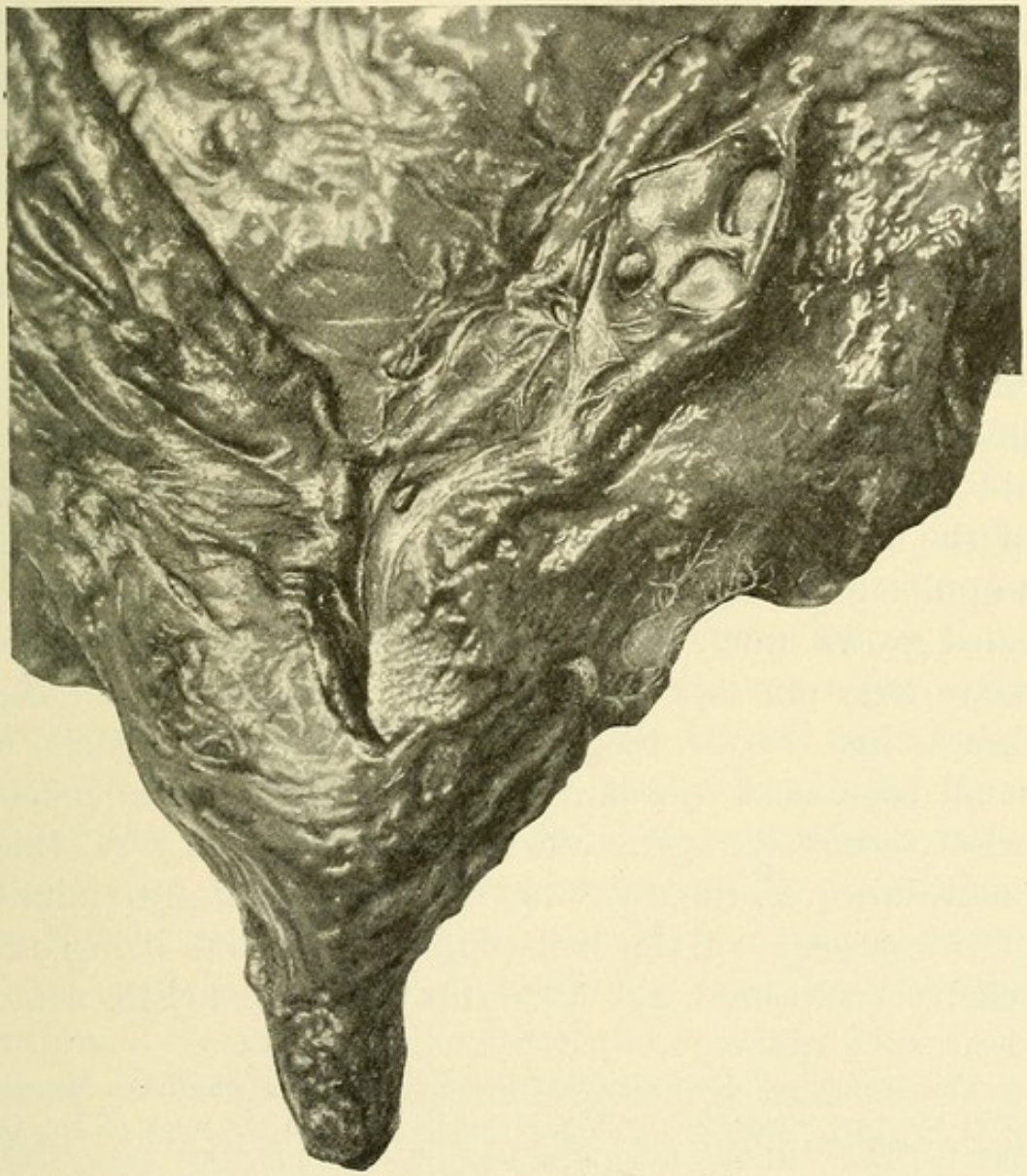
posterior median limit of the trigonum; E, the upper portion of the prostate; C, the membranous urethra. Back of this is the prostatic urethra. In the median longitudinal line, the elevated ridge of which is seen, is the caput gallinaginis or verumontanum with the parallel depressions on either side. Those depressions form the prostatic sinus. At about the middle, and on the summit of the caput gallinaginis, is a little oval, flattened area, with edges quite well defined. This is the sinus procularis, and it is in the forward sides of this body that the openings into the ejaculatory ducts are situated. The sinus procularis is small and hard to show in a photograph. Still, careful inspection will make it out mostly posterior to the pointers, P P, which mark the mouths of the two ejaculatory ducts. Attention is called to the thickness of the prostate above the urethra. This arrangement of the prostate, however, will be taken up more particularly in Plate VI.

Plate VI. represents a longitudinal section through the vesical neck. To accomplish this two vertical cuts have been made. The upper one above the urethra and bladder divides the structures in the median line. The lower one is not in the median line, but to one side, passing along the prostatic sinus. The smaller section has been pulled back out of view, so the picture represents the larger one. The seminal vesicle which shows is the outer side of the left. This vesicle projects considerably beyond the line of the lower vertical incision, which has cut through the lower wall of the bladder just above it, and it would have been in large measure removed with the smaller section had the lower vertical cut been carried downward sufficiently to reach it. Q is the band of fascia which marks the posterior limits of the prostate above the vesical neck. The elevated, flattened

area, the sinus procularis, extending along the summit of the caput gallinaginis, shows up in Plate VI. rather better than in Fig. 6. A study of the upper and lower sections through the prostate is most instructive, for it shows not only that that structure encircles the vesical neck, but also that about as much of it lies above the prostatic urethra as below it. In other words, this body occupies the position of a broad muscular ring about the neck of the bladder. The upper portion of this encircling band is seen to be placed relative to the urethra somewhat anterior to the lower portion. The convoluted contour of the seminal vesicle is distinct, together with the bands of prostatic muscular fibre which are inserted into its lower portion. N marks a fibrous line which extends through the lower section of the prostate. This fibrous line is the outer wall of the prostatic fibrous sheath, the infundibulum, which, as we have already seen in Fig. 4, encircles the ejaculatory ducts as they pass enveloped in their own common sheath through the prostate. These two sheaths are, as also seen in Fig. 4, separated from one another by a lymph-space. The direction of the fibrous line, N, from the seminal vesicle toward the anterior portion of the caput gallinaginis shows the course of the ejaculatory ducts and to what extent they are imbedded in the prostate. The space between the fibrous sheath covering the body of the seminal vesicle and the lower bladder-wall is seen to be filled with delicate connective tissue, which in fleshy individuals contains much fat. In fact, tissue such as this fills in all the otherwise vacant places in the recto-vesical space posterior to the prostate, serving the purpose, as it were, of a packing-material. In most of the engravings representing this space this delicate connective tissue has been removed in order to make the dissection

distinct. A consideration of this connective tissue becomes important in certain inflammatory conditions, as will be seen in studying the pathology of this region.

FIG. 7.



View of the interior of the seminal vesicle and of its ejaculatory duct.

The median posterior position occupied by the ejaculatory ducts, as seen in this Plate (VI.) as well as in Fig. 4, shows how impossible it would be to wound these parts in the operation of lateral lithotomy. This is important,

as the chance of wounding them, especially in children, has been one of the stock arguments for many years advanced against this surgical procedure.

Fig. 7[1] (somewhat below the normal size) shows the interior of a seminal vesicle and the commencement of its ejaculatory duct. An incision has been made into the connecting vas deferens and the shaft of an ordinary sized hair-pin forced down its duct. The end of the hair-pin shows in the picture protruding through the entrance of the vas deferens into its vesicle. This entrance is round and just large enough to allow the shaft of the hair-pin to pass through easily. Above this entrance, for an inch to an inch and a half, the calibre of the canal of the vas deferens is somewhat larger—probably large enough to take a catheter twice the calibre of the hair-pin. This enlarged area has been called the ampulla of Henle. Higher up than this, however, the canal grows much smaller, so that the shaft of an ordinary dress-pin is a tight fit. At the very top of the figure, just above the apex of the seminal vesicle, a small section of the shaft of the hair-pin can be indistinctly seen as it penetrates the vas deferens. At this point, however, the duct was not large enough to admit of the passage of the hair-pin shaft without being extensively ruptured, and this rupture extended for some

[1] The anatomical descriptions of the different ones who have investigated the part illustrated by Fig. 7 can be found in the work of Dr. O. Guelliot, Des Vésicules Séminales Anatomie et Pathologie, Paris, 1883. Those descriptions are more or less indefinite and conflicting. It is, therefore, probable that there may be some variation in minor details, such as in the number of the diverging canals, their exact course, etc., with different individuals. Still, in the several cases I have dissected much the same condition as is here depicted has been discovered. In making dissections I have found, if one makes the attempt by first opening the diverging canals, and then secondarily the main cavity, that considerable confusion as to the exact relative position of the parts is liable to result.

distance downward before the canal became large enough to admit it. The circumference, as has already been alluded to, of the walls of the vas deferens near its termination is much increased. A section through the structure in this part, however, will show that the increase in circumference is due in much greater measure to an increase in the thickness of the walls, which have here become very muscular, rather than to a marked increase in the calibre of the canal. The inside lining of the canal of the vas deferens in its lower enlarged portion is not smooth, but interwoven with muscular trabeculæ much the same as the figure shows exists in connection with a large part of the inner surface of the seminal vesicles. The view of the inner surface of the right seminal vesicle as seen in this figure was obtained by making a longitudinal cut through its posterior wall and through the posterior wall of the upper portion of its ejaculatory duct. The intervening prostatic structures were also included in the cut. The walls thus cut through were gently separated and held apart by the insertion through their edges of numerous pins. The upper part of the cavity thus exposed is seen to be larger than the lower portion and its walls less thick. In connection with the upper part of the cavity are seen three large holes, each of which has been stuffed with cotton. These three holes mark the openings into three canals of various lengths and directions, each of which finally ends in a blind sac. The two lower canals open into the upper portion of the cavity of the vesicle on its anterior surface. The upper canal really opens into the apex of the vesicular cavity. Such does not at first sight seem to be the case in this figure. This is because the vertical cut has been extended upward somewhat beyond the apex of the cavity of the vesicle, thus split-

ting open the true mouth of this canal. Then, besides the top pin exercising some traction pulls up the upper wall of the canal. These two factors go not only to make the true cavity of the vesicle appear to be a little longer than it should, and to be peaked rather than rounded, but also to make the opening of the upper canal appear lateral rather than as it is, vertical; consequently the upper cotton plug is not really in the mouth of the canal, as in the other two cases, but somewhat farther in. These slight changes were necessary in order successfully to photograph the dissection. These canals are lined by a delicate secreting membrane. They are in the neighborhood of half an inch to an inch in length, and so convoluted that should they be carefully dissected out they would appear much longer, and with, in some instances, diverticula. In tracing them from their mouths to their source it is found that the upper one from its downward opening makes a sharp upward arch, and then extends abruptly downward again for a considerable distance along the front surface of the vesicle. The large outer canal just below this one maintains throughout its entire course a general downward trend. The smaller inward canal runs upward, and is the shortest of the three. Below these are a number of small diverticula leading off from the cavity of the vesicle for very short distances. They are too small, however, to be specially mentioned as canals. It is easy now to understand the peculiar outside contour of the vesicle, attention to which has already been called. The main cavity of the vesicle is seen to resemble in some respects the pelvis of the kidney. Its lateral walls are firm and strong, and below the openings of the large canals downward two-thirds of the way to the opening of the duct of the vas deferens their inner surfaces are

interwoven with strong muscular trabeculæ resembling the inner walls of the cardiac ventricles. About the mouth of the vas deferens and below it, however, their inner lining is perfectly smooth. The lower half of the vesicular wall is very thick and muscular. This is well seen in the outer, but not so well in the inner section, as the latter is in shadow. The intimate association of the prostate with the lower portion of this muscular wall is also evident. The cavity of the vesicle is seen to be largest above in the space into which the canals empty, and from there gradually to decrease in size until the ejaculatory ducts are reached. The natural calibre of the ejaculatory ducts is considerably smaller than that of the hair-pin which projects through the opening of the vas deferens, but their walls are elastic and can be stretched to that calibre. Their urethral openings, also, are so small as only to be seen on careful inspection; but these too are capable of considerable enlargement on necessary occasions. The calibre of the opening of the vas deferens is seen to be very much smaller than that of the seminal vesicle at its point of entrance.

The object of the anatomical investigation just completed has been to render the subject-matter of the succeeding chapters the more intelligible. In striving to attain this, however, certain other points of importance have been revealed. Although foreign to the purpose of this work, it has seemed well to recapitulate some of them briefly.

The Pampiniform Plexus. Although the exact location of this plexus is not very well fixed in the popular professional mind, still it has been commonly supposed to envelop the lower surface of the prostate. This, as has been seen, is not the case, but that its principal focus is in the enveloping fascia and lateral to that body.

The Prostate Gland. The ordinary anatomical description of this body has been that it is about the size and shape of a horse-chestnut; that it lies between the rectum and the neck of the bladder; and that it consists of two lateral lobes. With this description in mind, it has been common to imagine that the whole gland might be removed by a perineal incision such as Von Dittel has advocated for some instances of prostatic hypertrophy. In fact, reports of the removal of the entire prostate by this procedure have appeared. It is, however, a circular muscle surrounding the vesical neck and intimately connected with the seminal vesicles, its muscular evidently greatly predominating over its glandular function.

The Position of the Ejaculatory Ducts with Reference to Lithotomy. As has been shown, the position of these ducts is such that there is no danger, or in fact possibility, of their being cut in the operation of lateral lithotomy. They may, however, be injured in the operation of median lithotomy or of perineal section, where the backward cut is too extensive.

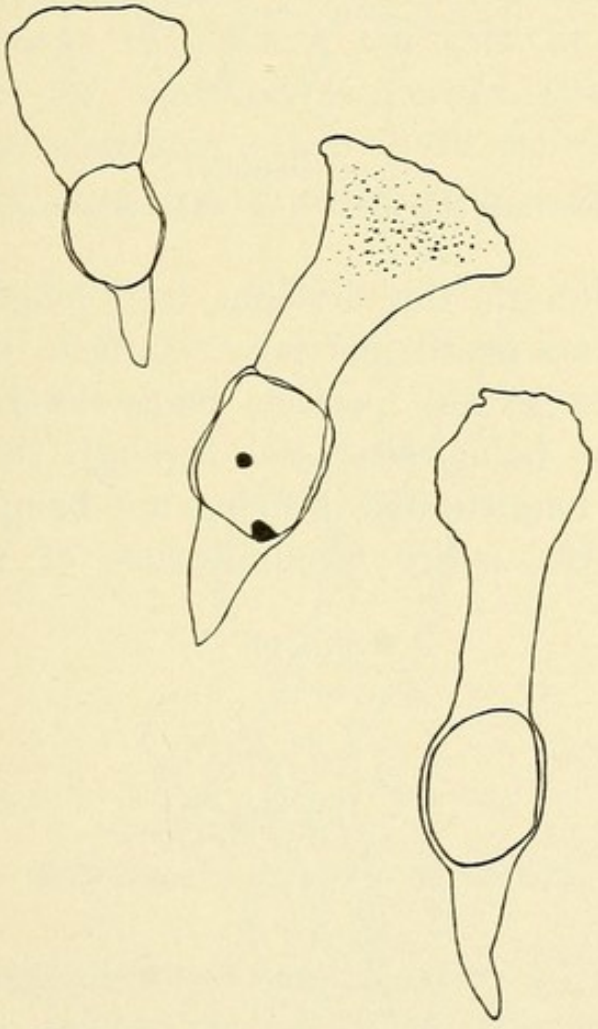
THE REPORT OF DR. JAMES EWING ON THE HISTOLOGY OF THE SEMINAL VESICLE AND THE VAS DEFERENS.

The following description of the histology of the ampulla of Henle and the seminal vesicles is based upon a study of twelve specimens, selected from males whose ages ranged from twenty to forty-five years, and in which these organs presented no apparent pathological changes.

The wall of the ampulla presents for examination fibrous, muscular, and mucous layers. The fibrous coat consists of several lamellæ of loose fibrous tissue inclos-

ing many bloodvessels, lymphatics, and gangliated nerve-cords. At the lower end of the ampulla this fibrous tissue unites with the similar investment of the vesicle, its lamellæ being separated by many longitudinal and transverse muscle-bundles, and finally it becomes merged in the fibro-muscular capsule of the prostate gland.

FIG. 8.

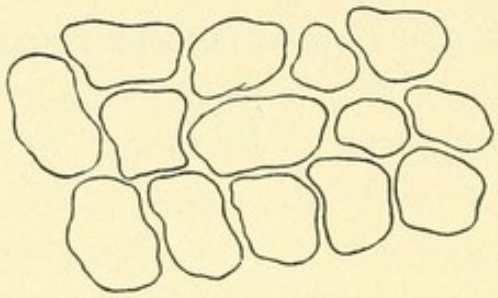


Epithelium of upper ampulla.

In the muscular wall of the ampulla the arrangement of the fibres varies with the level at which the section is made. Over the upper two-thirds of the ampulla two distinct layers may be distinguished, an outer longitudinal and an inner transverse one. From the inner layer

are derived the fibres which form the numerous rugæ and anastomosing trabeculæ which project into the lumen of the dilated canal. At the lower end of the

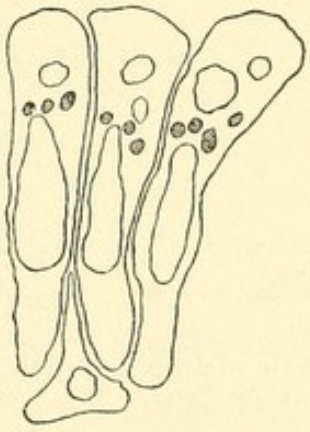
FIG. 9.



Upper ampulla.
Oblique view from above, showing clefts between tip of cells.

ampulla, although the division into longitudinal and transverse coats is still partially retained, the separation of the layers is less perfect, many longitudinal and oblique fibres being scattered through the transverse coat and the longitudinal bundles not being continuous throughout the entire circumference of the ampulla.

FIG. 10.

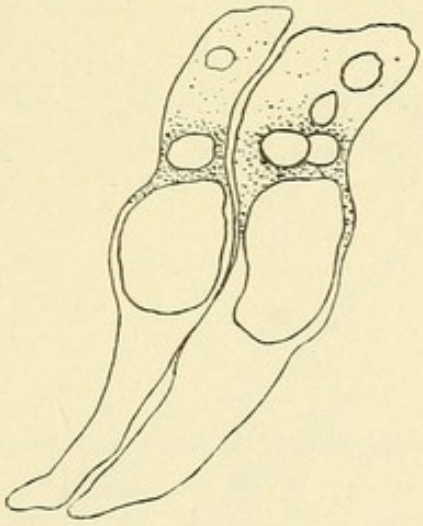


Epithelium of the tip of the ampulla.

Many of these fibres of the ampulla, as well as in the wall of the vesicle and ejaculatory duct, are found discolored by grains and globules of pigment.

The mucosa of the ampulla consists of one layer of high columnar, non-ciliated cells resting upon a layer of triangular or cuboidal cells, and supported by an indistinct membrana propria. The total area of exposed epithelial surface is very greatly increased by the fibro-muscular ridges and trabeculæ which rise in three or four tiers from the transverse muscular layer. The epithelial surface, therefore, presents innumerable depressions, and many diverticula are seen in cross-section which might be regarded as curved tubular glands, although the secreting power of the cells is not much more manifest here than in other parts of the mucosa.

FIG. 11.

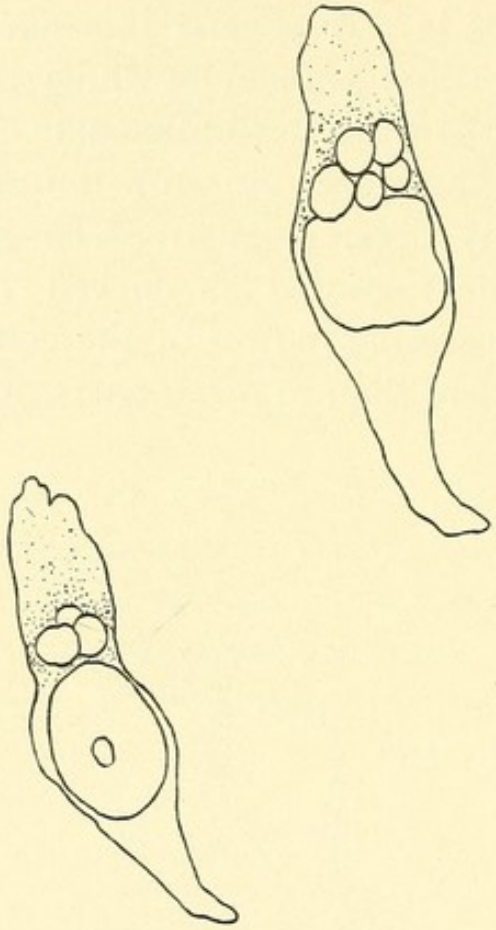


Epithelium of the end of the ampulla.

Examined under high magnification (1/12 oil immersion), either freshly teased in glycerin or in stained sections, the cylindrical cells show some striking peculiarities. Their length varies from 1/100 to 1/50 of a millimetre, the longer cells being derived from the depressions and diverticula. In outline they are irregularly conical, with long fan-shaped or club-shaped tips, and short pointed extremities fitting the interstices of

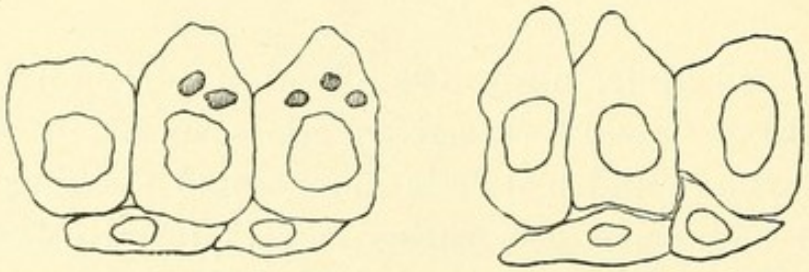
the second row of triangular or cuboidal cells. The nuclei are large oblong or elliptical masses situated at

FIG. 12.



Individual cells from the tip of the vesicle.

FIG. 13.

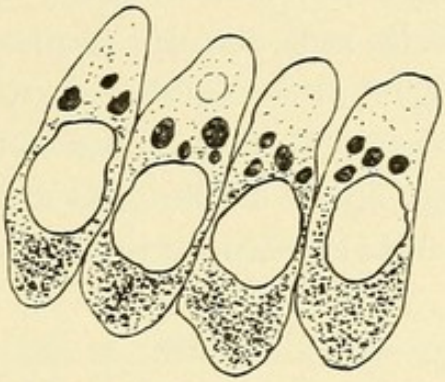


Superficial and deep epithelium from the tip of the vesicle.

or below the middle of the cell-body, and produce a distinct bulging of the outline. The protoplasm is finely

granular and strongly eosinophile, except at the projecting tip, where the cell-body is translucent and nearly devoid of granules. In this clearer portion of the cell many transparent vacuoles may always be seen which

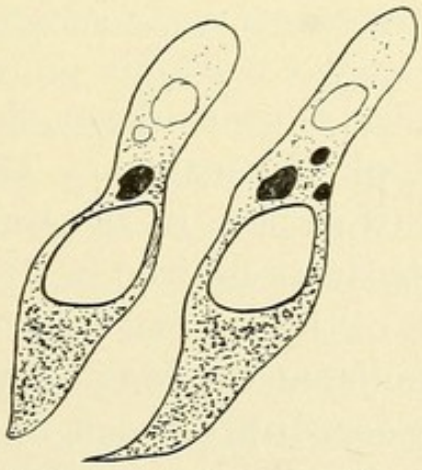
FIG. 14.



Epithelium from a deep alveolus near the tip of the vesicle.

respond to the tests for mucus. The uniform distribution of the mucus-globules leaves no doubt of the secre-

FIG. 15.

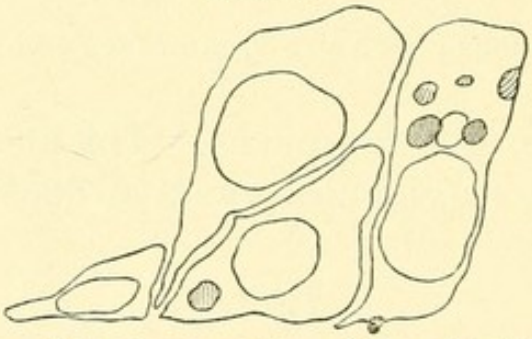


Epithelium from a deep diverticulum near the middle of the vesicle.

tory function of the entire epithelial surface of the ampulla. In addition to the globules of mucus, grains and masses of brownish pigment are very constantly found in the same portion of the cell, but limited frequently to the

protoplasm along the inner border of the nucleus. This pigment is identical in appearance with that found in the smooth muscle-fibres. In the diverticula of the mucosa, where the cells are somewhat higher than on the exposed portions of the canal, the mucus-globules and pigment-masses are slightly more numerous. Throughout the ampulla, the vesicle, and the upper part of the ejaculatory duct this pigment is so abundant as to produce a brownish discoloration of the mucosa that is plainly visible to the naked eye. Prolonged staining with osmic acid developed a black granule in the centre of many of

FIG. 16.



Epithelium of the lower portion of the ejaculatory duct.

the pigment-globules, thus showing the fatty nature of at least a portion of the masses. Their composition was not further explained by treatment with many aniline-dyes, nor by tests for iron or glycogen.

The fibrous coat of the seminal vesicles is very similar to that of the ampulla, and needs no further description.

In the muscular coat it is difficult to follow the course of the fibres for any length, and at many points along the base of the vesicle it is often impossible to distinguish any well-defined layers. At the summit of the vesicle, however, four distinct layers may often be separated. Of these, the two outer may be demonstrated to pass from one pouch to another, while the inner layers en-

circle single compartments only. Each of these two divisions consists of an outer longitudinal and an inner circular layer, and at the point where the outer fibres join two adjacent compartments together the two divisions of the muscular coat are separated by loose fibrous tissue supporting bloodvessels. The first set of fibres would tend to diminish the volume of the entire vesicle, while the action of the second set must be confined to the single compartment. From the innermost transverse layer are derived the fibres which form the numerous anastomosing trabeculæ that beset the internal surface of the vesicle.

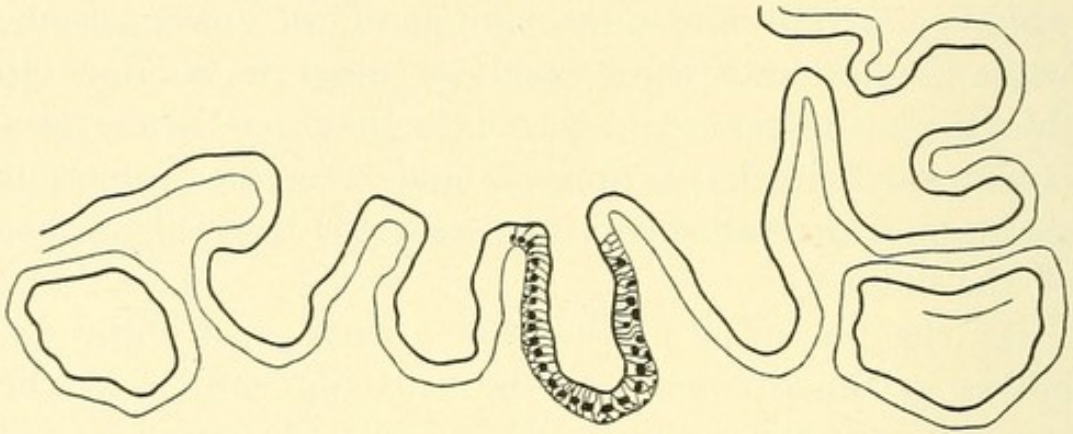
At the lower end of the vesicle there is a slight increase in the thickness of the muscular wall, but the separation of layers, as in the ampulla, is imperfect, and many longitudinal and oblique fibres are intermingled in the transverse coat.

The epithelial cells of the mucosa of the vesicle are very similar to those of the ampulla. They are usually lower than the cells found in corresponding situations in the ampulla. Lining the most exposed portions of the trabeculæ they are reduced to a cuboidal shape, and the cells of the second row become infrequent. In the recesses, and in the small diverticula sometimes described as tubular glands, they increase in height, and the mucus- and pigment-globules are more abundant. Except at the exposed portion of the summit of the vesicle, the secretory function of the epithelial cell is evident from the character of the protoplasm and from the presence of mucus-vacuoles.

The ejaculatory duct as it passes through the prostate gland is surrounded by a thick fibrous wall from which rise many low ridges and short trabeculæ that project into the lumen of the canal. In the periphery of

the fibrous coat are many small longitudinal muscle-bundles and single fibres, and also a number of cavernous blood-spaces which furnish a moderate erectile power to this portion of the seminal canal.

FIG. 17.



Lower half of the ejaculatory duct, showing the folds of the mucous membrane.

The epithelial cells lining the duct are similar in most respects to those of the vesicle and ampulla. On account of their height, the character of their protoplasm, and the presence of mucus and pigment, they cannot be regarded as simple pavement-epithelium. Even on the exposed rugæ they retain a considerable height, while in the recesses they can with difficulty be distinguished from the cells of the middle portion of the vesicle.

CHAPTER II.

PHYSIOLOGY.

As a preliminary step in the study of the physiology of the organs, the anatomy of which has just been considered, it is necessary to see clearly what their functions are.

These functions, grouped under three headings, are as follows: First, to aid in attracting the testicular secretion to the seminal vesicles; secondly, to store it there temporarily and to provide means to preserve its vitality during that period; and, thirdly, to expel the seminal fluid as occasion may require. All the literature which has heretofore appeared on this subject has drawn largely on theoretical considerations for its support, and it is admitted that such to an extent is the case in this chapter. Still, the attempt has been made to supplant theory by facts in every possible instance, the result being an overthrow of many old ideas.

In connection with the first function, namely, that of attracting the testicular secretion to the seminal vesicle, the opinion is here held that that duty is assigned in great measure to the lower enlarged portion of the vas deferens. It is further held that the ampulla of Henle, the enlarged cavity of the vas deferens, is not a storehouse for seminal fluid in common with the cavity of the seminal vesicle, and also that this portion of the vas deferens is not in the least associated with the seminal vesicle in the accomplishment of the ejaculatory act; in fact, that it has no direct connection with ejaculation.

The function here ascribed to the lower portion of the vas deferens, of, as it were, pumping the testicular secretion into the vesicle, has never apparently been mentioned before, the accepted theory having been that this structure and the vesicle shared in common the functions of storing and expelling the seminal fluid. This old theory was probably due to the idea, mistaken as the illustrations show, that the cavities in connection with these two organs went to make up one common space, thus furnishing to both direct connection with the ejaculatory ducts. Such, however, is by no means the case. The narrow cavity of the vas deferens communicates at a sharp angle with that of the seminal vesicle through a sphincter or, perhaps better, a valve-like opening, which when stretched is not half the diameter of the ampulla of Henle. When this sphincter or valve is closed the smaller cavity is wholly cut off from the larger. As the sphincter of this opening is incorporated in the wall of the seminal vesicle, it is evident when that wall is in a state of contraction, as would occur during an act of ejaculation, that the opening would be closed, thus rendering it impossible for the two cavities to empty themselves in unison through the ejaculatory duct. The valvular quality also of the opening prevents a back flow into the ampulla when the vas deferens is in a state of relaxation. Then, besides, the ampulla of Henle, even if there were no sphincter or valve, is too small a cavity in comparison with that of the vesicle to cut a figure as a storehouse for semen. If this structure is not directly concerned in the ejaculatory act, what is then its function? In this connection, also, it is well to ask the important question, which has been largely overlooked in the consideration of this subject, How does the testicular secretion get into the cavity of the vesicle?

It has always been taught that this was accomplished wholly by the movements of the ciliated epithelium. These movements may aid in this transportation. The whole canal of the vas deferens, however, is not lined with ciliated epithelium, as will be seen certainly in examining the epithelium lining the ampulla of Henle, which, as Dr. Ewing has shown, is columnar in character. There must, therefore, be some other force to aid in this flow of secretion from the testicle. This other force lies in the muscular-clubbed end of the vas deferens. In considering the anatomy of this part attention has been called to the thickness of these walls as seen on section, and to the muscular trabeculæ which line the interior of the ampulla of Henle. Suppose now these muscular walls contract—and they do contract at times, for what other function has muscular fibre?—the contents of the ampulla would be thrown out into the cavity of the vesicle. If then the little opening between these two cavities, exercising its sphincter-like or valvular qualities, should close a back flow would be prevented. The muscular walls then becoming flabby and relaxed, a tendency to a vacuum would exist in the ampulla of Henle exactly as exists under like circumstances in the auricle of the heart, which tendency would exert a gentle suction or traction on the fluid in the distal portion of the canal, thus gradually attracting it into the cavity of Henle. When this cavity refills another contraction would ensue, emptying it again according to the general rule which applies to all muscular cavities when distended.

We now come to the consideration of the second function of these organs, namely, to store temporarily the testicular secretion and to provide means to preserve its vitality during that period. It has already been shown

that the cavity of the vas deferens is not a storehouse for seminal fluid, hence this function devolves entirely upon the seminal vesicle. The means provided to nourish and preserve the testicular fluid during its confinement in the seminal vesicle is supplied by the secretion of the vesicle itself. The epithelium lining the vesicle, and especially that lining the canals which empty into the main cavity or pelvis of the vesicle, have secreting qualities and furnish this vesicular fluid. It is to this fluid that semen owes its gross appearances and characteristics. In fact, without the aid of the microscope, it is impossible to say whether a given specimen of ejaculated fluid is true semen, or whether it is made up simply of vesicular secretion, together with, as exists in all instances, a certain amount of prostatic secretion, which last plays the part apparently of a lubricant. In practice it is frequent to see such ejaculated fluid which is minus the testicular secretion in the cases of men sterile, but perfectly potent, who have had an epididymitis in connection with both sides, which has rendered both efferent ducts impervious. The normal vesicular contents are white with a slightly bluish tinge; in fact, it has much the color of skimmed milk, although somewhat denser in consistency. On exposure to the air this fluid becomes quite viscid and sticky, characteristics which are present only to a very slight degree when it is freshly ejaculated. It is distinctly alkaline in reaction, a property of vital importance, as spermatozoa die immediately in an acid media. It has a peculiar heavy odor, and coagulates somewhat on heating. It is saline, and on standing, probably due to the lowering of its natural temperature, numerous groups of crystals appear. These are called Böttcher's crystals (Virchow's *Archiv*, 1865, Bd. ii. p. 525), after the author who first

described them. Their chemical composition has not been definitely determined, but it seems to consist of phosphates. Under the microscope the fluid element appears transparent and slightly refractive, with here and there an irregular striation marking little areas where the fluid is more viscid than elsewhere. In fact, the picture presented is much that of ordinary mucus. Besides the spermatozoa, a description of which here is not necessary, the fluid is seen to contain a few leucocytes, numerous epithelial cells slightly larger than leucocytes, a few round refractive cells, the largest of which are about the size of those from the vesical neck, and considerable granular material, which is usually grouped rather irregularly. The various gross and microscopical appearances of the semen as presented in pathological conditions will be mentioned later on.

In studying the anatomy it has been seen that those canals which secrete the vesicular fluid enter the cavity of the vesicle, as a rule, at a very sharp angle. In fact, in the case of the two chief canals in Fig. 7, the angle is so acute that a fluid passing along them would be taking a course almost entirely opposite to that which it would later on have to take in passing from the main cavity of the vesicle to the ejaculatory duct. The reason for this is obvious ; it is to protect these secreting canals, and to prevent their contents from being emptied out during the act of ejaculation. By this provision of nature the seminal vesicle cannot be squeezed dry by direct muscular action, as might be the case were it a pear-shaped cavity with smooth lining walls, but at the end of the ejaculatory act the canals continue quite full. Then, after the muscular contraction, the walls of the cavity of the vesicle becoming flabby, the suction principle, which we have already observed in studying

the action of the clubbed end of the vas deferens, comes into play, causing the fluid in the canals promptly to flow into the main cavity of the vesicle, where it remains ready to act as a medium to preserve the spermatozoa, which are rhythmically ejected from the ampulla of Henle. A knowledge of this physiological point explains the reason why during a second act of sexual intercourse shortly following a first act almost as much semen is oftentimes ejaculated as during the first act, while as a result of further shortly succeeding acts almost no fluid is ejaculated, and that which is thrown off probably consists largely of prostatic secretion.

The Third Function, that of Expelling the Seminal Fluid as Occasion may Require. This consists of a strong simultaneous contraction in connection with the muscular fibres of the prostate and of the walls of each seminal vesicle. In Fig. 7 we have seen the firm muscular structure which goes to make up the walls of the main cavity of the vesicle, together with the trabeculæ which appear on its inner surface, and which closely resemble those in connection with the cardiac ventricles. In Fig. 7, and in Figs. 2 and 3 and Plate VI., attention has already been drawn to the fact that the muscular fibres of the prostate so blend with those of the vesicular wall that it is difficult to tell the exact limits of the two organs. In Plates II. and III. the strong fibrous bands which radiate backward and downward from the sides of the prostate and over the vesicles have been pointed out, and it has also been shown that a contraction of the prostatic body would tighten those fibres which are blended posteriorly with the fibrous sheath of the rectum, thus tending to elongate the sheaths of the vesicles, which last are closely adherent to these radiating bands, and consequently to squeeze, as it were, these

organs. If now a general contraction of the muscular fibres in connection with the prostate and vesicles takes place, and there is no reason to suppose that a partial contraction occurs, what happens? Two things simultaneously: the contents of the main cavity of the vesicles are expelled along and out of the ejaculatory ducts with considerable force, and the neck of the bladder back of the region of the opening of the ejaculatory ducts is firmly closed, rendering a backward flow of the semen into the bladder-cavity impossible. This latter condition is accomplished by reason of the circular arrangement of the muscular fibres of the prostate about the vesical neck. The muscular structures in connection with the membranous urethra do not aid ejaculation. In fact, rather than aiding the act, they in a passive way offer some resistance to it. This is shown by the cases of certain individuals in whom the prostatic vesical neck has been extensively injured, associated generally with loss of gland-substance as a result of operative procedures. Under those conditions the semen on being forced into the urethra may meet with more resistance from the membranous than from the prostatic urethra, and consequently may be thrown into the bladder rather than out of the meatus.

It is thus seen that the forces which transmit the testicular secretion from its source to its point of elimination are really analogous to those which govern the circulation of the blood. The clubbed end of the vas deferens corresponds to the auricle and the seminal vesicle associated with the prostate to the ventricle. The sphincter or valve-like opening between the ampulla of Henle and the cavity of the vesicle plays the part of the mitral or tricuspid valve. Although the principles of the machinery of the sexual apparatus and the heart are

the same, there are differences in the applications of those principles. In the first place, each contraction of the auricle is followed by a corresponding contraction of its ventricle, and the capacity of the auricle corresponds to that of its ventricle. With the sexual apparatus, however, the contraction of the clubbed end of the vas deferens bears no direct connection with the contraction of the vesicle and the prostate, and the capacity of the ampulla of Henle is very much less than that of the cavity of the vesicle. In fact, the contractions of the clubbed end of the vas deferens are very frequent in comparison with those of the larger cavity, and are in the nature of a constant slow pumping into the larger cavity of the testicular secretion as it collects in the smaller cavity. The function of the ventricle, also, is purely and simply that of a pump, while added to this the vesicle serves in the capacity of a storehouse and a commissary. While the nerve-supply to the ventricle corresponds to that to the auricle, and is involuntary in character, the supply to the vesicle and prostate is not wholly involuntary, and does not, therefore, entirely correspond to that to the vas deferens. The so-called sexual nerve-centre, which is in the lumbar portion of the spinal cord, has the chief control of ejaculation. The question, however, of nerve action and supply to these parts will not be further considered here, not only because numerous neurologists have already written ably on the subject, but also because such investigators are the ones best equipped for this consideration.

The amount of testicular and vesicular fluid secreted in a given time varies greatly, and depends much on the mode of life and the conditions of the individual. A person who is a high-liver, who takes a fair amount of physical exercise, but not enough to cause fatigue, who

has no mental worry or strain, and who allows his mind to dwell on women, is under conditions which seem to make him most potent sexually, and which cause the seminal secretions to be most active. Oftentimes with an individual who lives thus the mind reverts to women, especially in the form of erotic dreams, even though there be a mental attempt to avoid such thoughts. If, on the contrary, a person is poorly fed and overworked mentally and physically, the thought of a woman may be even repugnant to him, and should he attempt the sexual act he will find it fatiguing and associated with a moderate-sized seminal discharge.

The amount of fluid ejaculated at a given instance varies much, depending in a measure, as has been seen, on the frequency of the act. When the act is solitary and infrequent the usual volume of the fluid is from half a drachm to a drachm. Robin (Article Sperme du, *Dict. Encyclopédique*, 3d Serie, t. xi., 1882) has estimated the quantity at from 0.75 c.c. to 7 c.c. The quantity apparently varies considerably with the individual.

CHAPTER III.

PATHOLOGY.

The scope of this chapter will be confined to the consideration of morbid conditions which directly affect the male sexual function, giving rise to derangements, a clinical study of which will be undertaken further on. By so doing much of the pathology of the prostate will be eliminated, as most affections of that organ, especially senile changes, do not, certainly in any marked degree, affect the sexual function, but cause disturbances rather in connection with urinary drainage. That the sexual function is so little affected by most morbid changes in the prostate is probably because its power of muscular contraction is rarely lost. It is in connection with the seminal vesicles themselves, including their contents, their walls, the perivesicular tissues, and the ejaculatory ducts, that most of the pathological changes occur which cause disturbances in the sexual function, and the amount of disturbance in this function which these pathological processes cause seems to depend largely at least on the extent to which they interfere with the act of ejaculation. The changes due to inflammation are the chief pathological factors in this consideration. As a result of them the contents of the vesicles may lose in great measure their liquid qualities, becoming thickened and gelatinous, the walls of the ejaculatory ducts may grow inelastic and unyielding, the walls of the main cavity of the vesicle may become dense and rigid, and associated with this condition the perivesicular connective tissue may in the case of ex-

treme inflammation become extensively infiltrated; or instead of thickening and rigidity of the vesicular walls inflammatory changes may, by reason of ulceration, cause loss of substance and consequent thinning of those structures. Besides inflammatory factors, the sexual function may be impaired by motor or trophic disturbances in connection with the nerve-supply to the parts, by traumatisms, new growths, and calculi.

Inflammations can be grouped under the headings simple, gonorrhœal, and tubercular. There may be, also, a syphilitic inflammation; but if so, it has not as yet been demonstrated. Out of twenty-two cases of inflammation of the vesicles investigated by the author, apparently seven were tubercular, fourteen were either directly or indirectly due to gonorrhœa, and one was simple in character.

Simple inflammation involving the seminal vesicles is, as is seen, rare in comparison with the other two forms. It is usually, though not necessarily, of a light grade. Its chief causes are sexual excesses practised for a long period, and in most instances having their commencement at an early age, as from twelve to fourteen years, masturbation, unnatural sexual relations, such as withdrawing prematurely, the use of tight condoms, etc., occasionally total abstinence from sexual pleasures during the active period of adult life, and sometimes general nervous debility, as may exist in cases where there are cardiac, pulmonary, or renal disturbances and the like. Although these are the initial causes in most instances, still it is often found that the primary inflammation has been much intensified by the surgical procedures, such as caustics to the deep urethra, overdistention by sounds etc., which have been resorted to for the relief of symptoms.

Inflammations resulting from gonorrhœa can best be subdivided into direct and indirect. Direct gonorrhœal inflammations occur when the disease, in its acute stage, extends directly from the urethra along the ejaculatory duct and into the vesicle. Such inflammations are very acute and severe. The contents of the vesicle become purulent. The walls of the sac are always involved, as well as in most instances the perivesicular tissues, and occasionally in the severest cases the perivesicular inflammation extends sufficiently to involve the peritoneum, setting up a localized peritonitis which in a few recorded cases has secondarily become general. These direct acute cases are infrequent as compared with the indirect and more chronic ones. Indirect gonorrhœal inflammations result from an extension to the vesicle of inflammations connected with urethral lesions the source of which was a gonorrhœa. In many such instances the gonorrhœal attack antedates the vesiculitis by many years. This form of inflammation is usually chronic. The vesicular contents are more or less purulent, stringy, and viscid, and in the severer cases the perivesicular tissues as well as those constituting the ducts and the vesicular walls are involved. Occasionally the gonococcus persists in such instances. This form of inflammation resembles the simple variety. It differs, however, in that it is as a rule more chronic and its lesions more severe. E. Finger (*Internat. klin. Rundschau*, Wien, Feb. 12, 1893) has called attention to and laid much stress on this indirect form of gonorrhœal inflammation.

Tubercular inflammation in this connection is common and very important. It may be acute, subacute, or chronic, the last being its usual form. The acute form is rare and is associated with an active congestion and

ulceration of the mucous membrane of the vesicle, together with much purulent distention of the sac. The subacute variety is met with much oftener than the acute. It is of a light grade, and gives rise to but few subjective symptoms, and those of a temporary character, appearing generally as a result of sexual, alcoholic, or physical excesses. It causes a slight thickening of the vesicular walls and changes in the consistency of the seminal fluid, as will be described further on. This form may end in resolution, or it may be a forerunner of the chronic variety. The chronic form is much the commonest. In this form, although the vesicular fluid and the walls of the sac are affected, the latter becoming thickened and inelastic, still the characteristic feature is the extensive involvement of the perivesicular tissues, which in the early stages are invaded by a hard œdema. Later on, connective-tissue proliferation with occasionally purulent foci takes the place of the œdema. It is a very common occurrence with strumous individuals for a chronic tubercular inflammation to graft itself upon an indirect gonorrhœal one in connection with these parts. Several writers, Guyon in particular, have called attention to this point, which holds good not only with reference to the seminal vesicles, but also as regards the neck of the bladder. Tubercular processes in most instances extend from the deep urethra to the seminal vesicle, and in some cases seem to originate in the seminal vesicle itself.

The theory, formerly quite prevalent, that the epididymis is the frequent seat of primary tubercular deposits, from which source the vesicle is secondarily attacked, is confuted by clinical study and is fast being abandoned.

The author has observed a goodly number of cases in which at an early examination he has been able to detect

tubercular disease in a vesicle where some time afterward the corresponding epididymis became infiltrated with a tubercular deposit. In most such instances there would be nothing in the feel to indicate an involvement of the cord. It is in cases of this nature that a careless observer might advocate castration with the object of eradicating the entire focus of disease.

It is more common for any kind of an inflammatory process, in a given instance, to attack both vesicles with varying degrees of intensity rather than equally. In fact, it is not unusual for one vesicle wholly to escape, remaining perfectly normal, while the other may be extensively involved. This is what is to be expected, since the two organs are wholly distinct.

The extension of an inflammatory process from the seminal vesicle to the ampulla of Henle, and along the vas deferens to the epididymis, occurs, as everyone knows; but in what percentage of cases, and just what agencies determine this extension, are questions which have not been settled. The degree of inflammation in connection with the vesicle certainly does not determine it, as a most severe inflammation of that organ may show no tendency to extend in this manner, while an inflammation very slight and transient as regards the vesicle may show itself severe and persistent in connection with the epididymis or cord or both these structures. Unfortunately, little is known as to the effect of inflammatory processes on the clubbed end of the vas deferens. Perhaps, as the result of very severe inflammations, its function may be destroyed, and the cavity of the ampulla of Henle may be shut off from the cavity of the vesicle. There have, however, as yet been no clinical symptoms which could be differentiated as due to a derangement in this part. Pathological conditions, also, in connection

with the epididymis and cord, although of great importance, especially in considerations of sterility, rarely give rise to symptoms directly affecting the sexual function, and consequently will not be further considered in this connection. (The writer is aware that this last statement is at variance with many of the teachings of the present time, which lay great stress on the condition of the testicle and cord in sexual disturbances, utterly ignoring, usually through ignorance, the condition of the seminal vesicles in these instances.)

An element of great clinical as well as pathological importance in connection apparently with any of the forms of vesicular inflammation is that of germ infection. Such infection in most if not all cases occurs secondarily to the primary inflammatory factor, and acts to intensify and to complicate it. That such an infection is secondary is based not only on clinical experience, but also and more especially on the laws which govern germ infection and proliferation, as set forth by the experiments and investigations of Guyon and Albarran, and later by others, chiefly of the Necker school, in connection, to be sure, with the bladder; but it is reasonable to suppose that the laws of germ infection and proliferation which govern the bladder govern also the seminal vesicle or any other like muscular sac, as, for instance, the gall-bladder or the kidney pelvis. The function of the seminal vesicle is allied to that of the bladder in that it is a muscular sac lined with mucous membrane, which periodically empties itself of its fluid contents. These French investigators have found that germs of various kinds when injected into a healthy bladder fail to take root and are soon eliminated. They have further found that, in order to insure a colonization of the germs when introduced, one of two factors, and

oftentimes a combination of the two, is essential. These two factors are inflammation in connection with the vesical mucous membrane and stagnation of urine such as would occur artificially were a ligature placed about the penis, or naturally in case of stricture, prostatic obstruction, vesical atony, paralysis, etc. As just such conditions oftentimes exist in seminal vesiculitis, it is but natural to suppose that they govern germ proliferation here as well as with the bladder. That germ infection in connection with the vesicles occurs will be demonstrated in a chapter further on. Such germ infection is doubtless in most instances introduced from the urethra and along the ejaculatory duct; still, sometimes its source is probably through the intervening tissues and the vesicular walls from some near-by focus of germ-growth. The rectum presents a constant near-by focus, and as E. Reymond (*Annal des Malad. des Organ. Génito.-Urinaires*, Paris, April and May, 1893) has conclusively demonstrated that germs can penetrate the bladder-wall and the intervening tissues from neighboring foci when that organ remains inflamed and distended, the same is in all probability true under like conditions with reference to the seminal vesicle.

Regarding motor and trophic nerve-disturbances in connection with the parts under consideration little can be said. It is not known that any pathological conditions result from a tonicity of the motor nerves. There are, however, pathological conditions which result from an impairment in this nerve-force. In such instances, owing to imperfect expulsive action, the contents of the vesicles become thickened and gelatinous. The vesicles get, as it were, into a state of constipation, and the same secondary changes result from this state in connection with the vesicle as with the bowel. The thicker and

more gelatinous the contents of the vesicles become from the impairment in the expulsive force, the harder it is to empty them. The result is that they become over-distended. Finally, this over-distention is liable to set up an inflammation in connection with the walls of the sac, and this condition of affairs exposes the sac to germ infection. Thus it can be seen that a condition which at its commencement is of little moment may lead to aggravated vesicular disease. All that there is to be said regarding trophic nerve-disturbances is based on the condition existing in Fig. 5. Here a marked atrophy was found to exist in connection with the right seminal vesicle and the clubbed end of its vas deferens, and as the cavity of the vesicle was empty it was evident that this atrophy involved not only the muscular structures but also the secreting epithelia. The prostatic body, however, in this instance was not appreciably diminished in any portion, nor was there any change in the size or consistency of the corresponding testicle on comparing it with the left one, both these organs appearing normal to the feel. Unfortunately no clinical history accompanied this dissection. It is probable that the atrophic changes in this instance are analogous to those which occasionally involve the testicle.

Whether atrophy of the testicle can be occasioned by an inflammatory condition of the corresponding seminal vesicle is not known. The author has, however, observed in two instances testicular atrophy, there being a chronic inflammation of the corresponding seminal vesicle, which from the history of the cases seemed to have antedated the atrophy of the testicles. Both of these cases have been cited in the chapter on illustrative instances. In one of them an operation for varicocele had also preceded the atrophy, so that in that instance

the operation might be said to have been the cause; but in the other no varicocele existed, and no operation had been performed. In fact, there was apparently nothing, unless it were the vesiculitis, to account for the atrophy. In neither of these cases, however, was there any apparent atrophy of the prostate as a whole or of the portion corresponding to the atrophied testicles. There was, also, no atrophy of the walls of the inflamed vesicles. These clinical observations are opposed to the theory that loss or destruction of one or both testicles is followed by a corresponding withering of the muscular substance of the prostate as a whole, or of the lateral portion corresponding to the testicle which has been removed or destroyed.

Traumatisms in connection with the seminal vesicles are rare owing to the protected position of the parts. They may be injured by a perforating wound involving the rectum and bladder, such as occurs occasionally when one is thrown against or sits upon a sharp body. They are also occasionally involved, one or both ejaculatory ducts being cut across or lacerated in surgical procedures, as in vesical puncture per rectum for the relief of retention, in extensive prostatectomies, in median sections, where the cut is very deep, and in attempts to draw a stone too large in size through any perineal cut, be it median or lateral. From such injuries an inflammation of the whole vesicle results, which oftentimes extends to the epididymis.

The new growths which have been observed acting as factors in disturbing the sexual function are echinococcus cysts, cancer, and very rarely sarcoma. The recto-vesical space is quite a favorite starting-place for cysts of this nature, probably owing to its dependent position. In Sajous' *Annual*, articles on "Genito-Uri-

nary Diseases," years 1893 and 1894, numerous references are made to the literature relating to this subject. It is only occasionally that these cysts interfere with the sexual function, and when they do, it is by so growing as to exert a pressure on the vesicles.

Cancer and sarcoma produce disturbances by involving the seminal vesicles or the prostate, as it is evident if the latter body is implicated to any extent its function of contraction is destroyed. Cancer in this connection is usually primary in connection with the prostate or bladder, involving the vesicle secondarily. Guelliot (*Des Vésicules Séminales*, Coććoz, Paris, 1883) has collected fourteen cases of cancer involving the vesicles, in only one of which was the growth primary. Thorndike (Morrow's *System*, vol. i., "Diseases of the Seminal Vesicles," Appleton, 1893) records one such case which occurred in the service of Gay, of Boston. Sarcoma is very rare. Thorndike, in the article just referred to, has been able to find the records of but two such cases, one of these, Zahn's (*Deut. Zeitschrift f. Chir.*, 1885, v. 22), being primary in the vesicle. The subject of growths in this connection, therefore, owing to their rarity, is not of much practical importance.

Calculi of the seminal vesicles are rare. Guelliot in his work, reference to which has just been given, carefully reviews all the literature there is on this subject. This author asserts that these bodies are usually small and bear a strong resemblance to prostatic calculi. He records an analysis of one of them made by Peschier, which showed the mass to consist of phosphate of lime, 86 parts; carbonate of lime, 2 parts, and animal matter, 12 parts. Keyes, of New York, some years ago, removed a concretion the size of a bean from what apparently was the ejaculatory duct by means of a median

perineal section. Before the operation the concretion could be felt on passing a sound, the body apparently protruding somewhat beyond the opening of the duct. The patient suffered severely before the operation from painful ejaculations. This symptom was in great measure relieved by the removal of the concretion. The author recently met in his own practice a case of this description which will be recorded later on. The calculus was about the size of a grape-seed and quite rough. It was finally discharged along the ejaculatory duct associated with a large blood-clot during an involuntary emission. The emission occurred shortly after a vigorous stripping of the vesicle, a process which will be described. At the time of the stripping considerable bloody material had been forced out of the duct. It is probable that the manipulation had aided largely in dislodging the calculus.

The effect of the pathological factors just enumerated on the constituent parts will now be considered.

The Semen. This fluid apparently retains its normal alkaline reaction, though in other respects pathological. The author has tested this point in many diseased conditions, and has invariably found it alkaline.

The investigation was undertaken in order to ascertain if death of the spermatozoa, such as exists frequently in diseased conditions, depended on changes causing acidity of the semen, it being well known that such changes would in themselves be fatal to those organisms. As these chemical changes were not found to exist, death in this connection must be attributed to other agencies.

Abnormal coloring of the semen depends on blood and pus and rarely, apparently, on indigo. (See Morrow's article on "Disorders of the Male Sexual Organs," Morrow's *System of Genito-Urinary Diseases, etc.*, vol. i.)

The coloring lent by the admixture of blood depends on the amount of that fluid and the length of time that has elapsed since the bleeding occurred. If the blood is large in amount and fresh, semen may have the exact coloring of blood. The red tinge varies from this intensity, where the hemorrhage is severe, to a slight tinge scarcely discernible where it is trifling in amount. In cases where the admixture of blood is very slight the semen is not, as a rule, uniformly discolored, but presents little reddish specks marking clumps of red corpuscles, the color of the main body of semen remaining normal. The same description holds with reference to cases where the bleeding is not recent, except that in these latter cases the coloring lent by the blood is changed from red, and the reddish tinges to black or coffee-ground where the hemorrhage has been abundant, and to brownish or rusty tinges where it has been of less amount.

The coloring due to the presence of pus depends on the same rules as relate to the presence of blood. If the admixture of pus is recent and abundant, the yellow cream color characteristic of pus predominates. If the admixture is less, the yellow color is less accordingly. If the pus is old, a greenish hue takes the place of the yellow. It frequently happens that blood and pus both co-exist as pathological factors in a given seminal specimen. When such is the case different shades of coloring result, as one would expect from such a blending. Morrow speaks of wine-colored semen due to indigo, the crystals of which can be seen under the microscope; and of a grass-green semen, which is supposed to be due to a mixture of the colors associated with pus and indigo. Ultzmann has mentioned a blue semen. Such a color might, perhaps, be due to an indigo-blue.

Variations in Consistency. This subject is of much importance, as will be seen in considering the act of ejaculation. As a preliminary step in this connection mention should be made of sympexions, small, highly refractive amylaceous particles seen only by the aid of the microscope and somewhat resembling starch-granules. Attention was first called to these bodies by Robin (*Traité des Humeurs*, 1867; Art. Sperme du, *Dict. Encyclopédique*), who considered that they were normal constituents of the semen, being found, so he thought, in all cases where coitus had not been practised for four or five days. He also considered them absent in the cases of boys and in certain pathological conditions. The author, however, is of the opinion that these little bodies are pathological, and that they, although of no special importance in themselves, are representative of the process about to be considered of thickening or gellification of the seminal fluid. These sympexions are generally found in the glairy sticky shreds such as are voided in the urine of many individuals, especially of those who are popularly supposed to be losing their semen. Under the microscope these shreds are seen to consist of stringy mucus containing in its meshes here and there lifeless spermatozoa, sympexions, and pus-corpuscles or leucocytes, the latter being more abundant than one would expect to see in normal semen. Investigation of the seminal vesicles in this class of cases results, in the author's experience, in finding them usually more or less congested. Numerous examinations of freshly ejaculated semen from individuals in health have failed to demonstrate these particles. Sympexions dissolve in weak solutions of acetic acid and in acid urines. The mucus which envelops them seems to protect them temporarily from solution in an acid urine.

Hence the necessity of a speedy microscopical examination in such investigations. In many of the cases in which the shreds containing sympexions are found, and oftentimes in others representing a light grade or a quiescent form of seminal vesiculitis, if a stripping of the vesicles, such as will be described further on, is practised, followed by micturition, there will appear in the urine considerable quantities of material apparently of the same nature as these sympexions. The specific gravity of this expressed material, since it is free from mucus, is much greater than that of the urine, so that it speedily sinks to the bottom of the vessel. Some of this material is voided in cylindrical moulds of about the calibre of a knitting-needle, and occasionally approaching an inch in length, though usually considerably shorter. These cylindrical bodies are moulded by the ejaculatory ducts. Most of the material, however, appears as globules and of all sizes up to that of a small pea. The rotary motion imparted to it as it is forced along the urethra with the urine is probably accountable for the globular shape. These globules have some opacity and considerable refraction; in fact, they might well be likened in appearance to moonstones. In a minute or two they all disappear, being dissolved by the acidity of the urine in the same manner as sympexions, although more readily, since they are not protected by mucus, leaving a uniform opacity to the urine at the bottom of the vessel. If, however, after this stripping, instead of allowing the urine to be voided, the length of the urethra is stroked from behind forward, some of the expressed material appears at the meatus and can be examined microscopically. When this is done the material is found to be like that making up sympexions. In it are numerous dead spermatozoa and

other elements such as are found in seminal fluid. In fact, it is nothing more than thick jellied seminal fluid. What the agent is which causes this thickening of the semen is not known. It seems to be associated with a light grade inflammatory process, although possibly the length of time that the fluid has been secreted may have a bearing on the subject.

In severe inflammatory processes, where there is much pus, this jellification is not found. In such cases, however, inflammatory exudations and desquamations in connection with the lining mucous membrane of the vesicles and in ulcerative and malignant conditions, detachments of necrosed or new-growth material, may render the otherwise fluid contents of the sacs of such an irregular consistency that a partial plugging of the ejaculatory ducts ensues. Bleeding into the cavity of the vesicle when severe may be followed by a clot, but such an obstruction would be of a temporary nature, and consequently does not figure as an element of importance in this connection. Mention also need be here made of calculi as a possible cause for obstruction. Death of the associated spermatozoa apparently occurs as a result of thickening and inflammatory changes generally, in connection with the seminal fluid.

The Walls of the Seminal Vesicles. As a result of the pathological processes already considered, these walls may become thickened, associated with contraction or distention of the cavity, or thinned, with distention of the sac. Thickening is in large measure due to inflammatory infiltration into the submucous connective tissues, and also to a less extent into the intramuscular connective tissues. In some cases muscular hypertrophy accounts for a portion of the thickening, especially where the cavity is contracted. It is much more com-

mon, however, for thickening to be associated with a distention of the cavity and with muscular atrophy rather than hypertrophy. Where muscular atony occurs without inflammatory infiltration a thinning and distention of the sac results. In such cases, however, which originate in a lack of muscular tonicity, inflammatory infiltration is liable to occur as a later result. Rarely thinning of the walls may result from ulcerative processes, as in acute tuberculosis of the part. In all these inflammatory conditions distention of the cavity of the sac is the rule, owing to the changes in the semen and in the vesicular contents, which make its ejaculation difficult. In this connection also the mucous lining should be studied. Besides modifications in its natural secretion, blood and pus result from inflammations affecting it. Blood appears usually in acute or very chronic conditions, also as the result of ulceration. In acute inflammation the bleeding, which is liable to be small in amount, depends on the engorgement of the normal capillaries. In very chronic states the long-standing congestion of these small vessels leads to their permanent dilatation and hypertrophy. When such is the case a little strain or pressure may easily cause a rupture from which a hemorrhage, occasionally considerable in amount, may result. The appearance of blood, therefore, in these latter conditions is liable to be periodical or occasional. The amount of pus secreted depends largely on the severity of the inflammatory process, be it acute or chronic, little pus resulting from the mild grades. It is probable that other changes in connection with this mucous membrane occur similar to those associated with the mucous membrane of the bladder, but as yet there has been no demonstration of this fact. Finger (*Internat. klin. Rundschau*, Wien, February 12,

1893) holds that chronic inflammatory processes involving the ejaculatory duct by extension from the urethra cause a marked stenosis of its calibre. Such stenosis results, so he considers, from inflammatory exudations into their walls, followed by connective-tissue proliferation. Although agreeing with Finger as regards the inflammatory extension, still the author has failed to confirm his conclusions regarding stenosis, having never as yet encountered a case of seminal vesiculitis associated with distention of the sac in which it was not an easy matter, as a result of proper manipulation, to press out the inflamed mass along the ejaculatory duct. In most such instances, also, an examination of the expressed material will show either moulds indicative of a good-sized calibre of the duct, or masses of material such as could not have been expressed had there existed a stricture of the duct. The supposition that stenosis would result as an after-effect of inflammation in these ducts is plausible. That such apparently does not result, at least in the author's experience, is probably due to the anatomical arrangement. These ducts are not imbedded in connective tissue, but lie in the infundibulum of the prostate, a lymph-space, as it were. Consequently the greater part of an inflammatory infiltration would enter the lymph-space, and would not remain packed about the ducts in a loose tissue, eventually to create a connective-tissue proliferation.

Another very strong argument against stenosis of these ducts as a result of inflammation lies in the fact that cystic tumors originating from a retention of the vesicular contents, due to occlusion of the ejaculatory ducts, have never as yet been conclusively demonstrated to exist. Guelliot, whose work has already been referred to, after a thorough search of the literature, has

found only two cases bearing on this point, and with regard to these there was much doubt, as the surgeons who reported them simply supposed them to be such cases from the clinical evidences presenting. Cysts in connection with what remains of the embryonic ducts of Müller do occasionally occur, and as such cysts would naturally encroach on the territory of the seminal vesicles, it is reasonable to suppose that these two cases, as other similar obscure cysts of this region, may have originated in these embryonic structures, echinococcus cysts, of course the common form in this situation, having been diagnostically excluded. W. T. Belfield, of Chicago (*Journal of the American Medical Association*, Chicago, April 21, 1894), in a very instructive article, after considering the embryology of the organs of Wolff and Müller, records a number of cases where cysts of the post-prostatic region occurred, the walls of which were made up of the portion of the duct of Müller remaining pervious and unatrophied. In some of these cases the lower portion of the duct is not sealed, but communicates with the bladder, in which instances there exists a vesical pouch in the place of a cyst.

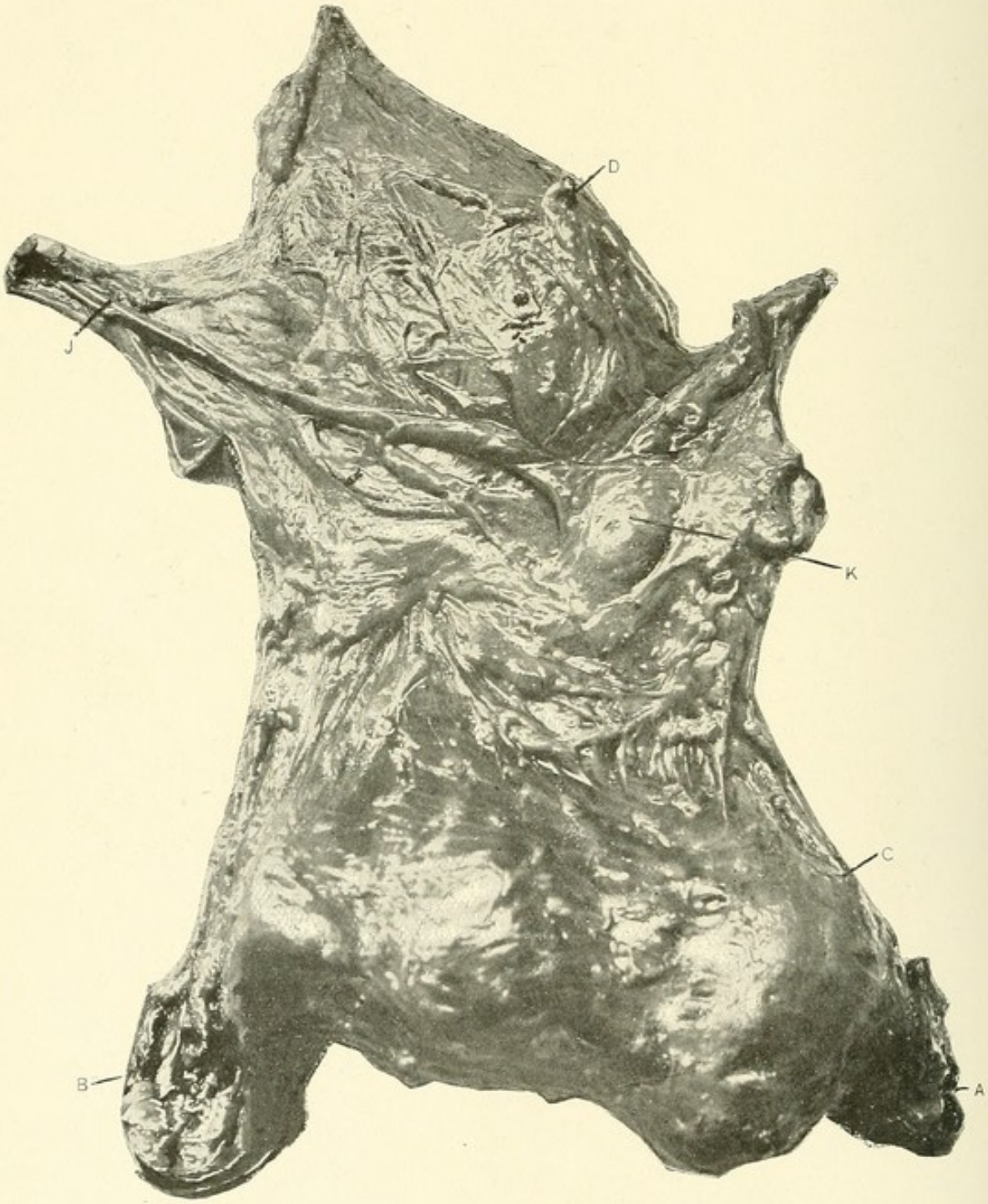
That inflammatory processes rob the seminal ducts of their natural elasticity and render them unyielding, so that they offer considerable resistance to the passage of semen, is probable, and such is the author's view of the question. It seems possible, however, to restore at least in great measure this lost elasticity.

Perivesicular Inflammations. Such inflammations are common and their results important in connection with sexual disturbances. Noel Hallé (*Annal. des Malad. des Organ. Genito-Urinaires*, Paris, Nov. and Dec. 1892) has recently treated the subject of inflammations involving the connective tissues outside the bladder

walls (perivesical inflammations) in a thorough manner. In this investigation Hallé was apparently struck by the frequency with which inflammatory conditions involved the connective tissues at the vesical base, especially as he located them in the wedge-shaped space between the ureters and the bladder-wall, the intervening space between the ureters apparently being less liable to such invasion. The author, as a result of clinical experience, felt convinced that most of the cases alluded to by Hallé as representative of a perivesical inflammation involving the space between the bladder and the ureter were cases of perivesicular inflammation. In other words, that most of the inflammatory conditions discovered bore a relation as far as their origin was concerned, not to the bladder or to the ureter, but solely and only to the seminal vesicle. In order to verify this opinion, derived from clinical study, the author made numerous pathological investigations which show that such inflammations of the connective tissue are really focused about chronically inflamed vesicles. Plates VII. and VIII. represent this condition in a marked degree, the inflammation being chronic and extensive. They both represent different views of the same specimen.

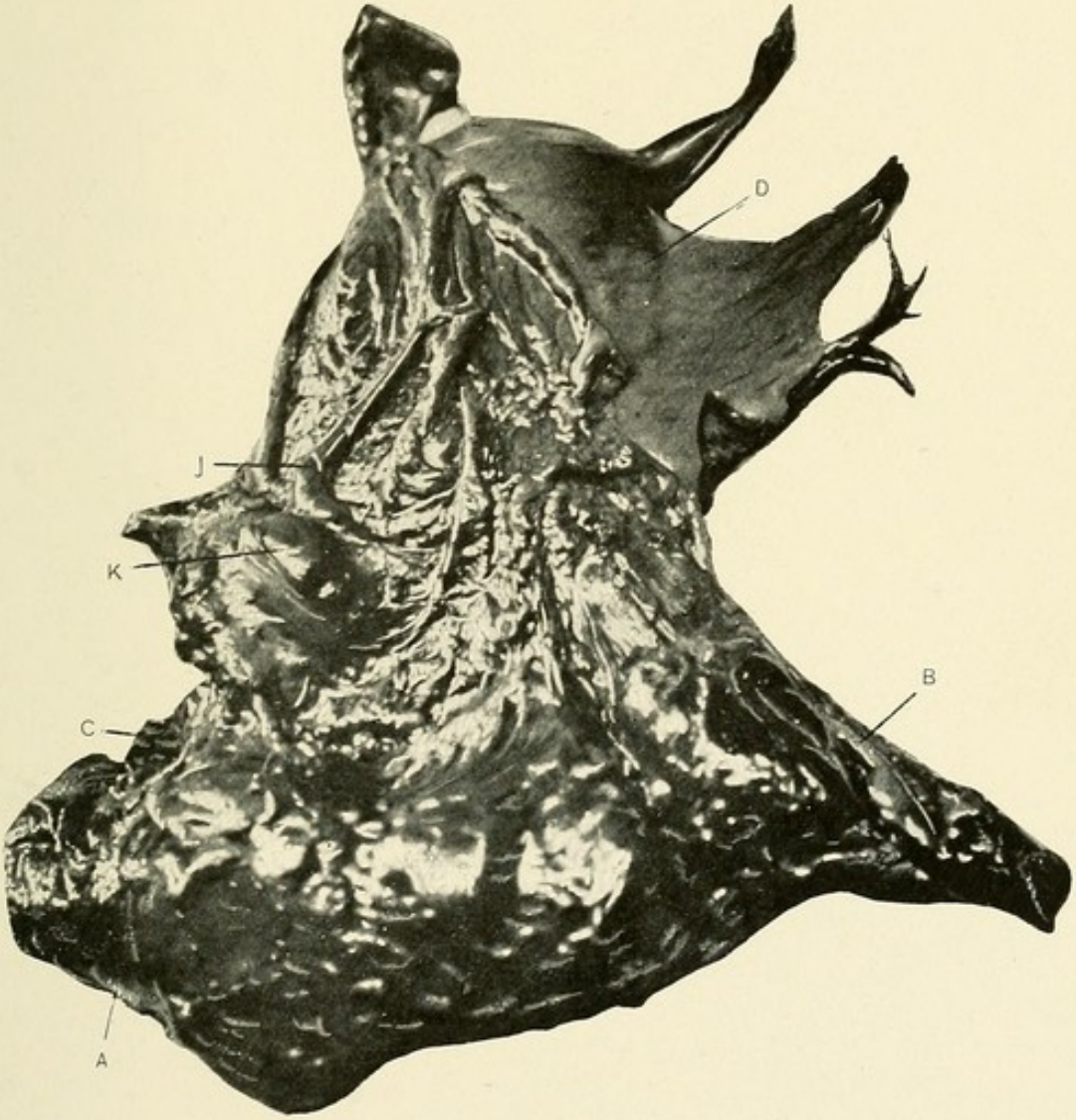
Plate VII. A represents the anus; B, the cut section through the bowel, five or six inches above the anus; C, the urethra; D, the bladder; K, the right seminal vesicle; J, the right vas deferens. A cut has been made through the sclerosed tissue down to and partially denuding the seminal vesicle. The loosened flap of this hardened mass has then been pulled forward by means of a thread which does not appear in the plate, thus exposing a portion of the vesicle. The exposed portion of the vesicle is not in its proper position, but

PLATE VII.



Chronic perivesicular inflammation—right side.

PLATE VIII.



Chronic perivesicular inflammation—left side.

has also been pulled forward by the traction exerted by the thread. The walls of the vesicle are seen to be fibrous and thickened, and they are so firmly imbedded in the perivesicular mass that it is only with the greatest difficulty that they can be dissected free from it. The extent of the perivesicular induration is considerable. It fills up the recto-vesical space, beginning in front at the posterior limits of the prostate and extending back to the peritoneal deflection. It also extends upward beyond the recto-vesical space, involving the perivesical tissue at the side of the bladder. This inflamed tissue is very hard and unyielding to the touch. It does not consist wholly of fibrous tissue, but in the meshes there is considerable hard fat-tissue.

Plate VIII. This plate represents the left side of the specimen. As in Plate VII., A represents the anus; B, the cut section of the rectum, five or six inches above the anus; C, the urethra; D, the bladder; K, the left seminal vesicle; J, the left vas deferens. A dissection has been made through the sclerosed mass down to and partially denuding the vesicle, just as was made and described in Plate VII., with the exception that in Plate VIII. the loose flap after being pulled forward has been tacked down, instead of being held in position by the traction exerted by a thread. In this plate the dense thickening of the walls of the seminal vesicle shows to better advantage than in Plate VII. The perivesicular infiltration and sclerosis are not, however, so extensive nor so bulky on this side as on the other. As has been said, the inflammation just illustrated represents a chronic stage. In its early stage these perivesicular tissues were invaded by a serous inflammatory exudation originating from the vesicular walls, the primary focus of inflammation. This exudation caused a condition of hard

œdema. As a next step, inflammatory changes in the connective tissue invaded by the exudation occurred as a result of this invasion. Then these inflammatory changes in their turn resulted in a proliferation and contraction of this tissue, thereby squeezing out the œdema and leaving the condition which appears in the engravings. Such is a description of most inflammations of the perivesicular tissues. Sometimes, however, in severe conditions the exudation is not serous but purulent. When such is the case, pus-foci are found in the perivesicular tissues. Those foci are generally small and do not communicate, being eventually absorbed, leaving as a result an extra amount of connective-tissue infiltration and sclerosis. Sometimes, however, they form intercommunications more or less extensive, due to the breaking down of the intermediate tissues, abscesses of greater or less size resulting. Many such abscesses when not absorbed probably discharge into the vesicle or into the bladder. Pathological investigations in regard to these abscesses are at present very limited. It is probable, however, that many of the extensive pelvic pus-formations, such as are occasionally encountered, and which may communicate with the bowel or bladder, have their source in perivesicular inflammations. Most of the so-called prostatic abscesses which finally terminate by discharging themselves into the bladder are presumably perivesicular in character. Mention has already been made of the fact that perivesicular inflammations when acute or extensive may involve the peritoneum. The resulting peritonitis is generally circumscribed and serous. Instances, however, have been reported (see Guelliot, already referred to) where it has been purulent and general. Gonorrhœa is the usual cause in such instances. Acute perivesicular inflamma-

tions are, as a rule, readily absorbed, leaving comparatively little sclerous thickening. Sometimes, however, they become chronic, associated with much sclerosis, especially in subjects tubercularly inclined.

After this study the important relation that pathological processes, especially inflammatory ones, bear to the mechanism of ejaculation can readily be seen. They all tend to interfere with that mechanism, whether they attack the seminal fluid, the ejaculatory ducts, the vesicular walls, or the perivesicular tissues, and when they involve one of these parts severely, or, what is more common, several of them at once, the effect may be such as to cripple that function. For instance, if the seminal fluid becomes thickened or gelatinous, it is ejaculated with greater difficulty; if the ejaculatory ducts become inelastic and ridged, they offer an abnormal amount of resistance to the passage of the seminal fluid; if the vesicular walls are infiltrated and thickened or sclerosed, they contract and are compressed with difficulty; if perivesicular infiltration and sclerosis exist, the body of the corresponding vesicle is held, as it were, in a mould, and its own muscular function as well as that of the prostate is thereby impaired.

CHAPTER IV.

CLINICAL FEATURES.

THE subject-matter of this chapter can best be treated under the headings: (1) Symptoms, (2) Histories, and (3) Physical Signs Resulting from Rectal Exploration.

Symptoms may be direct or indirect. Direct symptoms are largely localized, being confined to the sexual organs or to the organs adjacent to or connected with them. They bear a close relationship to the pathological processes which have already been considered. They may be inflammatory, functional, or neurotic. These varieties are usually more or less associated in a given instance, at times all three coexisting, although one variety may be present to the exclusion of the other two. They vary much in intensity with the individual affected. The severity of these subjective symptoms does not necessarily correspond with the severity of the pathological condition, oftentimes marked subjective symptoms being associated with a light grade pathological process. The reverse of this statement may also be true.

Indirect symptoms consist of neurotic disturbances of a reflex nature in connection with other parts and of mental disturbances. Such symptoms depend on disturbances in the seminal vesicles, although oftentimes at first sight a demonstration of this may be impossible. That it is the case, however, is frequently proven by the fact that these symptoms disappear as resolution resulting from treatment takes place in the vesicles.

Acute Seminal Vesiculitis. DIRECT SYMPTOMS. In this disease the direct symptoms are almost wholly inflammatory, neurotic and functional features being at a minimum. It is accompanied with temperature, acute pain, and tenderness. The pain is usually referred to the right or left supra-pubic region corresponding to the involved vesicle, and often also to the sacrum. From this region as a focus it frequently radiates along the spermatic cord and down to the testicle, although those parts may not be involved by an extension of the inflammation. When the pain so radiates the corresponding testicle may be retracted during a paroxysm. Then, again, it may radiate upward toward the corresponding kidney. It is not rare with this disease to have the pain reflected in the kidney region so severe and persistent that it is mistaken for pain due to pyelitis. It may also be reflected toward the vesical neck and along the urethra. As, however, these parts are frequently involved in this disease, with an active inflammation in common with the vesicle, the pain in them is not always of a reflex character. But at times the inflammation along the urinary tract has spent itself before the vesicle is involved. In such instances severe pain in this locality is evidently largely if not wholly reflex in character. Pain in connection with the urinary tract is often associated seemingly with the act of micturition. This act at such times is accompanied with pain along the canal, the desire to urinate being frequent and urgent. At the end of the act severe pain at the meatus, at the vesical neck, or at both those parts at once, may occur. From what has been said it must not be inferred that the urinary act is necessarily stimulated in these cases, for the opposite may occur, it being very tardy and infrequent, and unassociated with disagreeable sen-

sations. Sometimes, too, voiding of urine is difficult of accomplishment, the stream being very fine or perhaps dribbling. Under these circumstances the harder the patient strains in his attempt to micturate the worse the stream. This condition is brought about largely by reflex urethral spasm due to the vesiculitis, though, as will be mentioned under complications, inflammatory tumefaction may also play a part. Gentle palpation on the affected side above the pubes reveals great tenderness and abdominal muscular rigidity over the area involved. If the pressure is at all severe, active painful sensations are awakened. Rectal distention, either fecal or flatulent, shows this part to be very tender. The natural passage of flatus or the drawing it off through a tube gives relief. So, also, does the natural evacuation of the bowel if not attended with straining; otherwise the pain occasioned by the straining offsets the relief caused by the evacuation. Occasionally the tumefaction due to the disease gives rise to a feeling of rectal distention. If, under these conditions, attempts at defecation are made and persisted in, an aggravation of the symptoms, together with much pain and tenderness, results. In these cases, also, it is usual for the patient to derive some comfort by maintaining the thigh more or less flexed, thereby diminishing somewhat the tension of the abdominal structures. The temperature in these cases during their intensity commonly ranges between 100° and 104°. In this disease temperature, pain, and tenderness are very closely related to the amount of inflammatory distention existing in the vesicular sac. While purulent material is collecting in the sac, and is not being discharged, all three of these symptoms are on the increase, reaching their maximum at the period of greatest distention. When the sac begins to discharge

itself by the way of the ejaculatory duct, as is usual, passively, and not associated with any apparent act of ejaculation, the opposite state of affairs ensues, the three inflammatory symptoms decreasing, the amount of decrease being regulated by the freedom and extent of the drainage. Thus it is that watching the urine is important. This fluid is usually quite clear, sometimes perfectly so, while the inflammatory symptoms are severe, it becoming cloudy and purulent with the decrease of the symptoms as an escape of pus from the vesicular cavity occurs.

Neurotic disturbances in this condition are confined to the radiating pains which have already been mentioned. Functional symptoms, as has been said, are slight. In the first stage of the disease erections, emissions and other evidences of sexual excitement may exist, but they usually promptly disappear, inflammatory symptoms taking their place as the trouble progresses. This is natural, as the sexual function is usually in abeyance in febrile states. When emissions do occur, they may be bloody or discolored by little streaks of blood. Their purulent character, however, is the important feature; but this is generally overlooked, as no unusual stain is left. They are associated with pain sometimes extremely acute in character.

Such are the symptoms of a simple acute vesiculitis. In these cases, however, complications are frequent and need consideration. Involvement of the corresponding epididymis and cord by an extension of the inflammation is common. Regarding the epididymis in this condition, little need be said, as inflammatory troubles of this part are so generally understood; but with reference to the cord some mention should be made. This part may be so involved in severe inflammations as to ap-

proach in size the little finger. When such is the case, although the cord is tender, still the acute symptoms resulting do not arise from the cord itself, but from the fact that owing to its great increase in size it fills tightly the inguinal canal, thus tending to squeeze the accompanying nerves between it and the walls of the canal. The results of such a condition are severe neuralgic pains in the inguinal region, which usually radiate down the inner side of the thigh. Any movement of the thigh or testicle tends to aggravate this neuralgia.

It is unusual also in this disease for the inflammation to confine itself to the vesicle proper, but it may invade the perivesicular tissues. Occasionally this invasion is so extensive that it can be felt as a tumor on making abdominal palpation. In order, however, to feel this tumor, even in cases where it is extensive, it may be necessary to employ an anæsthetic to overcome muscular rigidity, and even then it may not be possible to demonstrate anything should the subject be fat. When this complication is extensive the inflammatory symptoms which have already been described are usually intensified, and convalescence is tardy. The peritoneum also may be involved in such cases, circumscribed pelvic peritonitis with its associated symptoms resulting. Such peritonitis is usually serous and circumscribed. Under favorable circumstances, however, it may gradually become quite extensive, and occasionally even general. Instances have been reported where it has been general and purulent. In such instances, however, it is probable that the peritoneal cavity was invaded by pus breaking into it from an abscess in this part, in which case the peritonitis would be general almost from the commencement. When pus accumulates in the perivesicular tissues, as may occur when

this complication is severe, it is very unusual for it to find vent into the peritoneal cavity. It oftentimes becomes quiescent and is gradually absorbed, or it may burst into the vesical cavity, there being a sudden great relief of symptoms associated with an abundance of pus in the urine. It may also, although this is infrequent, discharge into the rectum. Rare instances of urine leakage into the rectum after symptoms corresponding to those of acute vesiculitis probably represent cases where such an abscess-formation has discharged itself into both bladder and bowel, a fistula resulting. It is usual for the prostate gland to become inflamed in this disease. It is difficult to decide whether such inflammation of the prostate should be classed as a coincident independent inflammation or as a secondary one. It usually appears to be an independent inflammation due to the same cause which occasions the vesiculitis. Sometimes, however, the gland becomes involved by an extension of the perivesicular inflammation, in which instances it is secondary to and dependent on the vesiculitis. In cases of acute seminal vesiculitis, where there is much tumefaction in the region of the vesical neck, as would occur should the inflammation complicate the prostate, especially with elderly individuals already afflicted with a certain degree of chronic hypertrophy of that gland, or should a perivesicular abscess tend to point in this region, retention of urine may occur.

A few cases of pyæmia have been reported which apparently originated in an acute seminal vesiculitis complicated by a severe grade of perivesiculitis. Indirect neurotic symptoms have not been noticed in connection with this form of vesiculitis.

HISTORY. With these cases one almost always finds associated an urethral gonorrhœal infection. The gon-

orrhœa is generally in an acute stage when it extends to the vesicle. As immediate causes for this extension are found alcoholic stimulation, coitus, masturbation, sexual excitement or abuse in some form, exercise as horseback-riding, bicycle-riding, etc., which specially tend to irritate the perineal region; also occasionally a long railroad journey, continuous vibration and jarring here being the active factors. Urethral instrumentation, injection, or local medication may also act as an immediate cause, generally when undertaken injudiciously during the acute stage of gonorrhœa, although at times acute inflammation of the vesicle may result from urethral surgical procedures when undertaken apparently most judiciously, all acute and infectious evidences of a preceding gonorrhœa having disappeared. When such is the case, however, a strong suspicion arises that there already existed a subacute inflammation of the sac, which was suddenly stirred into activity by the instrumentation. For this reason it is always well to acquaint one's self with the condition of the vesicles before attempting a course of instrumentation. Rarely an acute gonorrhœa may extend to the vesicle, setting up an intense inflammation, without there being apparently any predisposing cause. The author has in mind the case of a boy, sixteen years old, who was put to bed on the first appearance of a gonorrhœa, and in whose case the most conservative and careful treatment was employed, no urethral injections or instrumentation being attempted. Nevertheless, at the end of the second week a double acute vesiculitis complicated with a double epididymitis occurred. It is possible that this boy may have caused this complication by practising masturbation; but as a nurse was in attendance all the time there was offered comparatively little opportunity

for this practice. As has been stated, a subacute vesiculitis may be stirred into an acute condition by urethral surgical procedures. The same may also happen under similar conditions as a result of the other factors which have already been enumerated as being immediate causes for acute vesiculitis during the active stage of gonorrhœa. Acute vesiculitis, however, as the immediate result of these latter factors, independent of a gonorrhœa, is very rare. When acute vesiculitis does occur unassociated with acute gonorrhœa the individual so affected is liable to be strumous if not actually tubercular, and it is not unusual to find that the underlying inflammatory condition of the vesicle is tubercular in character. Acute vesiculitis, non-gonorrhœal in character, does not represent so severe a grade of inflammation as the gonorrhœal variety.

PHYSICAL SIGNS RESULTING FROM RECTAL EXPLORATION. Owing to the sensitiveness of the parts and to the great pain occasioned by digital rectal exploration in acute vesiculitis, the knowledge obtained from this procedure in acute conditions is not nearly so great or so precise as that obtained in subacute and chronic ones. It reveals, however, in an uncomplicated case much tumefaction and tenderness situated above the prostate and to one or both sides corresponding to the position of the vesicle or vesicles involved. This tumefaction extends back beyond the reach of the finger. If the inflammation is largely confined to the vesicle, the tumefaction feels like a sausage under the rectal structures. On pressure it seems doughy and oftentimes indistinctly fluctuating. When such pressure is made much pain is experienced, together usually with a sensation of urethral fulness. Accompanying this urethral sensation a free, sticky, purulent flow from the meatus

is usual. In such an uncomplicated case the prostate is generally somewhat enlarged, showing congestion, and pressure upon it so as to disturb the ejaculatory ducts causes sharp pain. Lateral pressure, however, is not painful. But in many of these cases, especially where the acute process is of some duration, the inflammation extends outside the vesicle, involving extensively the perivesicular tissues, and oftentimes the prostate, particularly if rectal or vesical straining is a feature. Under these conditions the whole space between the rectum and the neck of the bladder may present to the feel a vast tumefaction. Maximum tenderness, however, is developed when pressure is exerted over the region of the vesicle. Such cases have usually been considered to represent prostatitis, the origin of the inflammation having been overlooked. It is, as a rule, easy to demonstrate the seat and source of the inflammation, however, by rectal explorations practised during convalescence, for then the inflammatory exudation in connection with the adjacent structures being in large measure the first to be absorbed the original tumefaction in connection with the vesicle can be demonstrated.

Subacute and Chronic Seminal Vesiculitis. Direct Symptoms. As there is no special difference in the symptoms by which subacute vesiculitis can be distinguished from the chronic variety, unless it be by their duration and severity, it was thought well in this connection to consider the two forms together. These symptoms, especially the functional and neurotic ones, are most varied and interesting. In fact, it was a desire to investigate them which prompted the author to undertake the study, a result of which is this book.

Inflammatory symptoms, although of least importance, will be considered first; in fact, with the great

majority of these cases there are no inflammatory symptoms, at least none bearing an apparent connection with the vesicle. This is one of the probable reasons why this form of disease has been hitherto so generally overlooked, since, being pathologically an inflammatory process, surgeons have sought inflammatory symptoms before being willing to admit of its existence. When inflammatory symptoms are present they represent a light grade of the corresponding symptoms associated with the acute condition, and as this subject has just been fully considered a complete repetition is not here necessary. There are, however, some points to be noted. Pain in these conditions shows a tendency to be reflex in character, and when such is the case will be considered under neurotic symptoms. When localized, however, it is generally complained of as being in the sacral region or above the pubes or in the bladder, less frequently in the rectum or in the perineum behind the scrotum. It is intensified by sexual excitement or emotion, such factors sometimes causing sharp paroxysms, which may not wholly subside for several days. Other factors which intensify these pains, although usually to a less degree, are constipation and diarrhœa, together with the consequent rectal straining and tenesmus, sharp exercise, and sometimes work which entails much bending forward of the body. Abdominal palpation, unless very heavy, is not liable to show much tenderness, and very rarely any inflammatory thickening. Sometimes, however, in these cases tenderness is a striking feature. It is then generally referred to the perineum, any pressure there causing discomfort and occasionally severe pain. Individuals so affected choose a hard, smooth seat, a soft, springy one being avoided. Where this tenderness is extreme an inflated rubber ring

is habitually taken about to sit upon, thus avoiding all perineal pressure. As a result of these painful sensations it is common for the patient to become convinced that he has a vesical calculus or growth, a rectal tumor, hemorrhoids, prostatic disease, or the like; and in the hope of relief many of these sufferers have submitted to various operations on the urethra for alleged stricture and on the rectum for hemorrhoids, ulcers, fissures, etc., at the hands of surgeons who lay more stress on doing something than on diagnostic research. Fever is not a feature of this condition. When present it is not continuous, except occasionally where the process is tubercular, but paroxysmal, in which instance it usually announces itself by a chill. These paroxysmal attacks of fever may be very severe. They are liable to occur in those cases of vesiculitis complicated by germ infection, which have been mentioned in studying the pathology; and as a result of some investigations undertaken by Dr. Keyes and the author the bacillus colli commune seems to be the germ especially responsible. Sometimes there is no immediate apparent cause for a paroxysmal attack in these cases, but generally one can find such a cause in a traumatism, very slight perhaps, either in connection with the vesicle or with some part adjacent to or connected with it. Chief among these causes are urethral and bladder instrumentations or local medications, rectal disturbances either resulting from surgical procedures or from the state of the bowels—that is, from constipation, impaction, diarrhœa, etc., together with the accompanying straining and tenesmus, and less frequently exercise especially affecting the part, such as shoreback-riding.

Functional symptoms are, as has been said, very important, and among them sexual disturbances are of

great frequency. Sexual desire in the majority of instances is diminished, in a less percentage it is intensified, and in a few cases it is not affected. It is not unusual for intensified sexual desire to be a symptom of an earlier stage of the disease, loss of desire representing a later stage. Then, again, return of desire, either normal or intensified, often occurs as a result of treatment, and may be one of the early favorable prognostic signs. It is of importance to note that aversion to women is no feature of this loss of sexual desire, such as may be associated with psychological cases. Loss of desire also has been acquired and not inherited. In some instances where desire has not been lost it has been rendered sluggish, unusual and persistent means having to be employed in order to arouse it. Where there is intensified desire the degree may vary from a slight increase to instances where the craving may be intense and almost constant. Gratification, however, derived from intercourse in this condition generally bears an inverse ratio to the intensity—that is, gratification is little or nothing in those cases where the craving is constant. From this, however, it does not follow that gratification is intensified in those cases where the desire is weakened, for such is not the case, weakness and diminished gratification being there corresponding symptoms. Power of erection corresponds closely to sexual desire; in fact, it may almost be said to be the active indication of sexual desire. In those cases where desire is lost the power of erection is lost, and where it is intensified the power of erection is increased, sometimes in extreme instances to such an extent that priapism becomes a very annoying and painful symptom. A common cause for complaint regarding erections associated with sexual weakness is not only that they do not

occur, but also that they lack vigor, the penis at no time being thoroughly stiff and rigid; and that they are not persistent, but fail at the critical moment, either as soon as coitus is attempted or before a satisfactory completion of the act has been accomplished, the failure being accompanied in this latter instance by an incomplete ejaculation. Derangements in connection with seminal emissions are important. There are very few cases of this disease where at some period of their course emissions have not been a cause for complaint. The grounds for complaint with reference to them are that they are too frequent; that they result from an insufficient exciting cause or before a sufficient cause has had a proper opportunity to act; that they occur spontaneously, there being no real cause; that they are very tardy or do not occur at all; that when they occur the muscular action apparently is incomplete, little or no ejaculation resulting; that they are followed by or associated with pain, sometimes intense, though generally dull in character, resembling one of the varieties of vesicular pain which have already been considered, or that they are followed by a feeling of depression and weight and not of satisfaction and pleasure such as is natural; and that their color, or, what is more usual, the stain left by them, is abnormal. When the complaint is that they are too frequent reference is usually made to involuntary nocturnal emissions. In this connection it is well to state that the occurrence of such emissions as the result of erotic dreams is physiological and natural, especially in the case of young, vigorous adults, and to a less extent in later life, where recourse to sexual intercourse is infrequent or irregular. Physiological emissions may occur as often as once a week or once in two weeks; then, again, two or three may occur in a group within a

day or so, to be followed by a considerable interval of repose. This explanation of what is normal is given in order to correct a common error, which is that involuntary emissions, if not in themselves pathological, at least point in that direction. In pathological conditions involuntary emissions may occur nightly or oftener, frequently several times a week over considerable intervals of time. Another point of importance also with reference to them is that oftentimes coitus has no effect in reducing their frequency, just as many or perhaps more than usual occurring shortly after the sexual act. In these instances the erotic dream, if present, is so to such a slight extent that it is not to be reckoned as a feature, and the act of ejaculation may be associated with little or no erection; in other words, they occur without sufficient cause. It is not essential, however, that emissions resulting from an insufficient cause should be nocturnal, for they may occur while the individual is in an active mental state. Their occurrence under such circumstances is liable to be symptomatic of an aggravated pathological condition of the vesicles. With individuals so affected oftentimes the sight of a voluptuous woman in reality or in picture, and, in fact, anything the least suggestive, may be a sufficient cause. Occasionally with these cases no cause at all can be ascribed for the act. The class of individuals who complain of the emission taking place prematurely on attempting coitus may or may not suffer from involuntary emissions. If the premature act is associated with an increase in sexual desire or erections, involuntary emissions are apt to coexist. If, on the contrary, it is associated with feeble desire and weak erections, they are not likely to coexist. Occasionally in cases where the sexual desire is slight the erections, though only

partial, are still persistent on attempting coitus. In such cases the emission may be very tardy, and at times it may not occur at all. Those cases in which although the erection is strong yet there is no emission are usually psychological. Then, again, and this condition is more common, an individual may complain that habitually during sexual intercourse a feeble sensation of ejaculation is experienced, which is succeeded by little or no emission. These are the cases in which pain or a feeling of discomfort, depression, or lack of pleasurable sensation is apt to follow the act of ejaculation. The cases in which intense pain follows upon or immediately after ejaculation are those where an insufficient emission or no emission at all follows a violent act of ejaculation. They have been spoken of as spermatic colic, and are occasioned by some obstruction to the passage of semen along the ejaculatory ducts or to some radical interference with the muscular mechanism. Of course, the obstruction or interference would have to be in connection with both vesicles in order entirely to prevent an emission. Such is not usual, one only being in most instances at fault. The pain, however, in this latter condition is generally so acute and sudden as in great measure to arrest the ejaculatory act, and hence little emission results in either condition. Associated with this acute pain there is often a feeling as if something suddenly gave way. Sometimes the ejaculatory sensation may be normal and yet no semen may appear at the meatus. In these cases the semen may be ejected backward into the bladder. Such a condition of affairs may exist, as has already been seen in studying the pathology, the result of surgical procedures on the vesical neck. Bloody emissions are generally associated with painful ones, or they may occur in chronic vesiculitis

from sexual excess or from a traumatism. Yellowish or greenish-yellow stains indicate that the emission was purulent. By this clinical investigation of the subject of emissions, together with their various associated symptoms, it is seen that numerous qualities indicative of disturbances in the mechanism of ejaculation are brought to notice. These disturbances are of prime importance, as will be noted in studying treatment. In questioning patients, therefore, in whom seminal vesiculitis is suspected, it is always well to bring out the particulars regarding emissions and the ejaculatory act, such as have just been enumerated.

The passive loss of semen unassociated with an emission, or, in fact, with any sexual excitement, is another frequent cause of complaint in this condition. The usual story is that there often appears at the meatus a glairy, pasty discharge, which the patient may have of his own accord diagnosed as seminal from its general characteristics. The favorite time for the appearance of this material is described as after a constipated or active stool, the coincident straining and tenesmus, together with the direct pressure of the fecal material on the seminal vesicles, being assigned as the cause. In some instances where this sticky discharge is slight it is from the prostate and indicates little, unless it be a sensitive condition of that organ and of the deep urethra, the usual cause being over-sexual excitement or indulgence; but in those cases where it appears in abundance as the result of the above-described bowel conditions, it is a clinical symptom of considerable value indicative of seminal vesiculitis. The microscope is of great aid in settling the source of such a discharge.

Masturbation may be a symptom of seminal vesiculitis. The author has in mind a case where it was so

present to a marked degree, the clinical history of which will be published later on in this book among illustrative cases. This symptom may be commoner than it appears to be, owing to the fact that most individuals addicted to the practice are secretive regarding it. That masturbation was a symptom of vesiculitis in the author's case was shown by the fact that the practice stopped, together with all desire in that direction, promptly as resolution resulting from treatment took place in the vesicles. In the case under consideration masturbation was resorted to in order to quell a sensation of sexual craving associated with erection or a tendency to erection. This sensation of craving, which was almost constant, was intensified at times. During these periods of intensity, provided coitus was impossible, the tendency to masturbate would become so strong that the individual could not resist it. The act would be repeated several times, very little relief or satisfaction with respect to the craving, however, resulting from it. Sometimes in this case the individual stated that he would wake up finding himself practising the act. Most cases of excessive or habitual masturbation are psychological. This case will be further considered under differential diagnosis.

Curious sensations, with reference to the penis, the testicles, and the scrotum, are common. The complaint may be that the penis always feels cold or numb and is shrivelled; sometimes that there is a feeling as if that organ was foreign, having no real connection with the rest of the anatomy. Then, again, there may be a feeling of dragging or relaxation in connection with the testicles and scrotum. Sometimes this sensation is marked. At such times considerable pain is apt to be associated, so much so, in fact, that a suspensory-bandage may be habitually worn in order to secure some

relief. Instead of feelings of relaxation, those of contraction of the scrotum and retraction of the testicles may occur. In some instances the retraction of the testicles may be so violent as to be very painful. These opposite sensations of relaxation and contraction may, and, in fact, often do, alternate in a given instance. In this connection the complaint is frequent that the testicles are withering, although there is no real evidence of this fact; also that the sensations experienced on the manipulation of them are less acute than normal or are strange and unnatural. In such cases it is common for the individual or the surgeon, as the result of an examination of the part with the idea of finding in some local pathological process a cause for the symptoms complained of, wrongly to ascribe everything unnatural to a varicocele or to a cyst, should these formations happen to be present.

Neurotic sensations in connection with the urethra and the vesical neck are common, and frequently are the features especially dwelt upon by individuals in the clinical recital of their complaints. These sensations are often, in the complainant's mind, associated more or less with the urinary act. They may be described as burning sensations, of varying degrees of acuteness, extending all along the urethra during the act of micturition, or the point of sensation may be localized in some definite spot along the urethra, generally just back of the frænum. In such instances the complaint is usual that the spot has the feeling of being raw, and that in micturition, as soon as the urine in its outward flow reaches the point in question, a sharp pain is experienced. The individual in these instances is usually so positive about this supposed raw spot that he insists not only on putting his finger on the point on the outside floor of

the urethra, showing where it is situated, but also on the surgeon's making a careful urethral exploration of the region, which, it is needless to say, presents a perfectly normal appearance. Then, again, the painful region may be located at the vesical neck, in which case sensation is most marked at the end of the urinary act. It is usual to find that these urethral sensations, although apparently dependent on the urinary act or on the state of the urine, are, nevertheless, most marked after a sexual strain or after sexual excitement which has not been relieved by natural sexual intercourse. Rarely a urethral reflex pain of this nature may persist without being aggravated or affected in any way by the urinary act. The author has in mind a case of this description where a painful spot in the urethra, associated with persistent sexual craving, was very constant. On attempting intercourse, however, the power was very weak. In this case the individual stated that the only way he knew of ridding himself of the urethral pain was by drinking freely of ale, after which, for the time being, it would disappear, associated with a temporary return of the sexual power.

In this connection the act of urination should be studied. Seminal vesiculitis of itself, there being no inflammatory cause located along the urinary track, may, to an extreme degree, affect this function. The results of this agent, however, are not always alike; in fact, they may be opposite. Thus in one extreme the urinary act may be stimulated and excited to such a degree that incontinence results, a rubber urinal having to be worn; and then, on the contrary, it may be inhibited, sometimes sufficiently to cause temporary retention. The stimulating effect of this form of disease on the urinary function is met with more frequently than

the inhibitory one. In many instances, of course, this function is not in the least disturbed. Where it is stimulated the usual complaint is that urination is urgent, perhaps every hour or so by day, although at night the interval is longer and the urgency less. On those days also when the sexual function is excited and overtaxed micturition is more urgent. Where the function is inhibited complaint is made that at times urination is very tardy, and when it does occur the stream is small, with no force, or the urine comes drop by drop or in little jets. During the height of such attacks it may not come at all for several hours, a tight muscular spasm persisting. When these attacks pass off the stream is usually satisfactory. The attack is generally associated with sexual excitement. In a case which will be related it occurred as a regular thing every morning, the individual in question having great difficulty for two or three hours each morning after rising in voiding his urine, a hot sitz-bath often being necessary. At other times during the day the stream was usually all right and of large calibre. The reason the author has for ascribing to this form of seminal vesiculitis functional disturbances in micturition, such as have been described, is that in very numerous instances where these disturbances have existed, associated with subacute or chronic vesiculitis, a cure of the vesiculitis has been accompanied by a spontaneous cure of the symptoms of urinary disturbance, previous attempts to cure them by the employment of various other means having wholly failed.

Persistent urethral discharges, if not symptomatic of subacute or chronic vesiculitis, are at times dependent on inflammations of those parts. Such urethral discharges are not rare, and are of much importance. The

author first called attention to them in an article on "Seminal Vesiculitis," *Journal of Cutaneous and Genito-Urinary Diseases*, New York, September, 1893; and the next year, in the June and July, 1894, numbers of the same journal, he published an extended study of the subject, under the heading "Persistent Urethral Discharges Dependent on Subacute or Chronic Seminal Vesiculitis." In order to give the reader an idea of this subject it has seemed well to quote here the introductory portion of the last article, reference to which has just been made.

"Formerly, oftener than at present, it was customary in medical literature to find mention made of a class of urethral discharges which were so rebellious under all known and approved forms of treatment that the most efficacious plan seemed to be to leave them alone to recover as best they could. Many such cases would finally get well of themselves, but in the great majority of these instances the person afflicted would be positive that something or other which he had done, generally in desperation, had cured him.

"In a respectable percentage of these individuals the extraordinary alleged curative agency would be sexual or alcoholic excess, or, and as very frequently happened, a combination of the two. Since the introduction of deep urethral instillations and of the electrical illumination of the urethra through the endoscope, permitting topical applications to be made, cases of so-called incurable urethral discharges have wonderfully diminished; but still a goodly number exist, as evidenced by the many chronic cases one sees which have been the professional rounds without relief.

"I flatter myself that I have been able to cure, at least apparently, and as thoroughly as one can ever

claim to cure a chronic urethral discharge, a certain number of these cases, which at my own and at the hands of others had resisted all the usual forms of treatment.

"In treating a number of them I was aided by the valuable advice and co-operation of Dr. Keyes, and it was from him originally that I obtained the ideas which I have endeavored to develop. A consideration and classification of these cases, their histories, more or less minute according to the points of interest presented, together with some comments, are the objects of this paper.

"During my earlier investigations with reference to vesiculitis, usually undertaken in the cases of individuals who presented symptoms indicating a disturbance of the sexual functions (see article on 'Seminal Vesiculitis' in the September, 1893, number of the *Journal of Cutaneous and Genito-Urinary Diseases*), I was impressed with the fact that in a certain percentage there coexisted a urethral discharge, oftentimes somewhat intermittent in character, generally scanty in amount, although occasionally profuse. Inquiry disclosed the fact that a number of these individuals had already sought treatment for these discharges, almost invariably without success.

"As the vesicles in these cases presented the chief focus of disturbance all treatment was directed toward them, little or no attention being paid at the time to the discharge. As, however, the vesicles got better it was observed that the discharge oftentimes also disappeared. These facts, together with the instances already alluded to, a number of which had come under my personal observation, where patients tiring of a tedious and apparently futile treatment for chronic discharge, had

broken the rules laid down by their medical advisers and indulged freely in sexual intercourse, resulting in the cure of their complaint, led me to investigate the condition of the seminal vesicles in all cases where a discharge had proved itself rebellious to the ordinary modes of treatment, even though there were apparently no coexisting sexual derangements.

"Within the last two years, during which time I have been actively investigating this subject, I have seen quite a number of cases which apparently were of the class under consideration; but in this article it has seemed best to notice only such of them as remained under my personal supervision for a considerable interval, and concerning the final outcome of which I am well acquainted, all transient cases and those simply seeking a diagnosis with instructions being discarded. The cases thus left for consideration number twenty-two. Of these, seven were evidently tubercular in character, and will be considered last of all by themselves, the fifteen representing simple inflammatory conditions coming first.

"In most of these fifteen cases the origin of the inflammation was gonorrhœal. In some of them that disease was the immediate cause of the vesiculitis, though commonly it was found to be the cause more or less remote. All but one of the fifteen acknowledged having had gonorrhœa at some time or other, although a number of those admitting a former clap did not themselves ascribe their existing trouble to that source.

"In twelve of the fifteen cases, as the result of treatment, all signs of discharge have disappeared, although in several of these twelve cases some signs of vesiculitis still exist, it having been observed that ordinarily the discharge ceases before complete resolution in the

vesicles has taken place. On this account some patients consider themselves cured when the discharge stops, and consequently become careless or neglectful of further treatment directed toward the final cure of the vesiculitis. Of the remaining three cases, all very chronic in character, one is slowly but steadily improving; one is irregular in attendance, easily discouraged, and, although somewhat better, is not relieved; and one an elderly gentlemen, with considerable accompanying chronic prostatic hypertrophy, showed no signs of improvement after numerous treatments."

In many of these cases, where the discharge was promptly and permanently cured with the cure of the vesiculitis, it had persisted for years, rebellious to all forms of treatment directed toward the urethra and bladder. An important point also with many of these cases was that although a discharge was present, still a careful inspection and examination of the urethra failed to reveal any inflammatory lesion, such as one would expect to find as a cause for chronic discharge. If, therefore, a urethral discharge persists, associated with symptoms of vesiculitis, such as we have considered, or if it persists, there being apparently no urethral lesion, even if other symptoms of vesiculitis are not prominent, seminal vesiculitis should be suspected as a cause therefor. In this connection, however, it has seemed well to quote again from the author's article in order to guard against conclusions in this particular which may have been too hastily or too superficially drawn.

"It is quite possible that readers of this article, after considering the cases reported, in which the urethral discharge was seemingly dependent on the associated vesiculitis, may infer that such a discharge is one of the cardinal symptoms to be looked for in diagnosticating

this disease. This idea is to be discouraged, not only because it is very inaccurate, since in a great many cases of vesiculitis there is no discharge, but also because it might lead those who are inclined to be superficial and to jump at conclusions to neglect the study of the urethra, the common seat of the lesion causing a discharge, together with other possible sources. We have all seen illustrated this tendency to jump at conclusions in this same matter of persistent urethral discharges, as the result of Dr. Otis's writings on stricture of large calibre. These ideas, good in themselves, and valuable in the right place, were so perverted that it became the routine practice with many to cut freely the anterior urethra, not only in all cases where there was a chronic discharge, but also oftentimes even for pus in the urine, no attempt apparently having been made to trace the source of the pus, which in a number of cases I have in mind was of pelvic origin."

Variations in the urine may depend on subacute or chronic vesiculitis, and consequently may be symptomatic more or less directly of those conditions. In the chapter on pathology attention has already been called to the floating shreds of glairy, sticky material often found in the urine of individuals so affected, and which under the microscope prove to be made up of vesicular fluid, sympexions, spermatoza, etc. In a certain percentage of the cases where urethral discharges dependent on a vesiculitis have existed, more or less free pus has also been noted in the urine. Observation in a number of these cases has shown that this pus disappeared the same as the discharge when a cure of the vesiculitis was effected. The point, however, of chief importance in this connection is that at times the presence of bacteria in the urine is dependent on a chronic

vesiculitis, which is itself complicated by germ-infection. We have already, in studying pathology, considered this complication of germ-infection in connection with chronic vesiculitis. In such bacterial urines the inflamed vesicle may be the source of the supply, the germs entering the bladder either directly through the intervening tissues, penetrating its walls, as Reymond has shown us they can do, or by the way of the ejaculatory ducts. These urines, provided no pathological factors exist in connection with the bladder, can be freed from bacteria by eliminating the neighboring focus of infection, which result can be accomplished by curing the vesiculitis, or by ridding it of its bacterial complication. An illustrative instance or two of this will be cited in the chapter devoted to cases. A few special remarks on the subject, however, in this connection will not be out of place. If bacteria persist in the urine of an individual in whose case the factors favorable to germ-propagation in the bladder are absent, such as defective drainage resulting from stricture, prostatic enlargement, vesical atony, etc., and cystitis in its various forms, then an outside focus of propagation should be looked for to account for the source of the germ-supply. Such a focus is, in the majority of these instances, situated in the pelvis of the kidney. In a minority of them, however, it is in the vicinity of the bladder, generally from the seminal vesicle or from a perivesicular abscess, the cavity of which may or may not communicate directly with the bladder by means of a sinus. That such a focus of infection is at times in the vesicle has been proved by the author in a number of instances in the following manner: In a representative case the contents of an infected vesicle have, by rectal digital manipulation, been pressed out along the ejaculatory duct.

The seminal material which has dripped from the meatus as the direct result of the manipulation before the act of urination has been found to contain great quantities of bacteria similiar to those existing in the urine, and the urine then passed immediately after this has been found to be loaded very much more than usual with the bacteria. After a time, as the result of such manipulations undertaken at proper intervals, the vesicular focus of germ-growth has been eliminated. Coincidently with this elimination of germs from the vesicle it has been discovered that similar germs no longer exist in the urine. In such an instance these experiments conclusively show the source of the bladder infection to be from the vesicle, and eliminate the kidney pelvis from any participation in the matter. Krögius, of Helsingfors (*Annal. des Malad. des Organes Génito-Urinaires*, Paris, September, 1894), records a number of cases where in the urine freshly voided bacteria in large amounts were always to be found, unassociated, however, with any discoverable inflammatory processes of the urinary tract. For the existence of such a state of affairs, when occurring in the male, he could offer no valid reason. To the author, however, it seems probable that an infected and inflamed seminal vesicle was the source of the germs in most, if not all, of these cases.

Albumin in small amount, unassociated with pus, may also be present in the urine, dependent on an existing seminal vesiculitis. That such is a fact can be demonstrated by curing the vesiculitis in a case of this nature, in which event the trace of albumin will disappear. A small amount of albumin is especially apt to occur in those cases of vesiculitis, such as have just been described, in which the complication of bladder germ-infection occurs. For this reason they are liable

to be wrongly diagnosticated as cases of pyelitis. After sexual excitement or exercise the amount of albumin may be somewhat increased.

Blood may appear in the urine or associated with an urethral discharge, its presence being apparently dependent on an existing chronic seminal vesiculitis. The author has seen one such instance. In this case there were bloody emissions, and bleeding at the end of the urinary act was frequent. There was present also a constant urethral discharge, which was at times tinged with blood. All attempts to control this bleeding by methods directed toward the urethra or bladder had failed. The cure of a chronically inflamed vesicle resulted in a permanent cure of the bleeding, as well as of the discharge.

A marked tendency to phosphatic turbidity of the urine is at times noticeable in those suffering from chronic vesicular disease, due probably in great measure to nervous derangements resulting from it. The presence of crystals of calcic oxalate may also occasionally be accounted for in the same manner. When such is the case, these disturbances in connection with the urine are liable gradually to disappear as the cause for the nervous derangements is removed.

INDIRECT SYMPTOMS. These symptoms have already been defined at the opening of the chapter. In describing them the neurotic disturbances will be considered first, the mental ones afterward. As has been said, neurotic disturbances of this class generally bear no apparent connection with vesicular disease; but that they are dependent on it is shown by the fact that they disappear as resolution takes place in the vesicles. These disturbances are very varied and peculiar, and, although the attempt will here be made to enumerate

such of them as have come to notice, still the enumeration will probably be imperfect, as further studies in this direction may demonstrate. Severe headaches may be complained of. In these cases the patient frequently locates the pain in the region of the temples or in the occiput, and describes it as very sharp in character; or it may be general, in which instance it is liable to be described as dull or throbbing. These headaches will usually be found to be occasioned or intensified by sexual excitement or strain, emissions, and sometimes even by the sight or thought of an attractive woman. Sharp attacks of pain in the epigastrium may be a feature. Such pains are probably due to neuralgia of the cœliac plexus. A case of this description has come to notice where the individual, owing to such attacks, was treated for over a year for intestinal colic, supposed to be due to functional bowel derangements. Extensive treatment in that direction, however, did him no good. After a careful examination no other evidences of bowel derangement, aside from intermittent attacks of epigastric pain, being discovered, attention was directed to other sources in search for a cause. As a result of questioning he was found to be suffering from symptoms pointing to the vesicles. Although married, he was troubled with seminal emissions, his sexual desire was weak, and his power feeble, the act of coitus being exhausting. It was also found that the attacks of supposed colic generally followed sexual excitement or action. Vesiculitis was discovered and relieved, since which time there have been no more attacks of epigastric pain. A case of vesiculitis was observed where there had coexisted with numerous well-defined symptoms of that disease a peculiar buzzing or ringing sensation in connection apparently with the ears. This sensation

had really been the feature of the case, advice having been sought regarding it from several aurists without apparent benefit. As the individual wished to get married, and was fearful of doing do, doubting his sexual capacity, advice in that connection was sought. Vesiculitis was discovered and cured, one result being that the ear disturbance promptly and permanently disappeared. Among similar disturbances which have been observed to disappear permanently with a cure of the existing vesiculitis are feelings of numbness in connection with the extremities, hot sensations, at times alternating with cold ones, generally of the extremities, sometimes in connection with the body, in which case they may be located in the spinal region; hyperæsthesia or anæsthesia of varying degrees and situations, sometimes complained of in connection with one side of the body, thus making the individual fearful of impending paralysis; sensations in various parts, such that oftentimes the sufferer becomes suspicious of cancer, etc. In fact, it may be said that all the symptoms which it is customary to associate with hysteria may be indirect neurotic symptoms due to an existing seminal vesiculitis. From this statement, however, it must not be assumed that hysteria in the male is necessarily dependent on disease of the vesicles, for in many instances, and probably in the majority of them, such is not the case, the vesicles being pathologically sound.

Mental disturbances are often a feature; in fact, as has been dwelt upon in the introductory chapter, it has hitherto been customary in such cases to regard the mind as the seat of trouble, the idea that pathological or physiological factors in connection with the sexual apparatus could be accountable having not even been thought of, or, at most, discarded as of no importance.

That such is so, reference is made to the recent article on sexual neurasthenia by Guyon (*Annal. des Malad. des Organ. Génito-Urinaires*, Paris, November, 1894), a genito-urinary authority of great eminence, in which, although it is admitted that a gonorrhœa often precedes sexual neurasthenia, and that, should a digital rectal exploration be attempted in one of these cases, great tenderness would probably be complained of in the vesicular region, yet it is asserted that in these cases there exists no pathological cause, local or otherwise, for the symptoms, but that functional disturbances in connection with the nerve-centres are accountable for, and, in fact, are the source of, all existing disturbances. The author, however, is certain that had Guyon investigated the tender vesicular area, revealed by digital exploration of the rectum, especially in those cases where there had been a preceding gonorrhœa, such as he mentions, pathological changes of an inflammatory nature would have been discovered, which would have necessitated a modification in his statement that no pathological conditions coexisted; and the author feels confident that had this eminent surgeon directed his treatment toward the vesicles, and had he cured them, his opinion regarding the origin of the existing symptoms would also have been modified, the vesicles rather than the nerve-centres being held to be the source largely, if not wholly, of all trouble.

These mental symptoms are melancholy in character. In the lighter grades complaint is frequent of a feeling of mental lassitude, of a disinclination to mental application, and of a difficulty in the concentration of thought. After moderate mental application, or after acts which require an exhibition of skill, nerve, or good judgment, there is often complained of a feeling of undue prostra-

tion; the hand trembles, and there is a cold perspiration, associated with sensations of exhaustion, on making further attempts, the like of which would formerly have been easy of accomplishment. The mind in some instances is not clear; there may be a reversion of thought more or less frequent to sexual subjects. Among the subjects of this nature on which the mind often ponders are fears of impotency. The sexual powers of by-gone days are compared with those of the present, or what others have said regarding their own powers, or the remarks of lewd women, generally in derision, are treasured up, resulting in an augmentation of these fears. From a fear of being laughed at, owing to their supposed weakness, individuals of this class may become very shy regarding women. When this is the case, their fears of impotency are liable to be confirmed, at least in their own minds, for when they, possessed of such feelings, attempt intercourse, and especially with a stranger, the act is a failure, either because sufficient erection does not result, or because ejaculation is too precipitate. Closely allied to fears of impotency are fears regarding marriage. These individuals often engage themselves to marry, having at first thought little of their sexual capacity; then later, their sexual disturbances being intensified by the engaged state, they begin to become fearful regarding their ability to consummate the marital act. From this a mental brooding and melancholy may result. At other times the pain and reflex sensations and symptoms attendant on a seminal vesiculitis, by their constancy and persistency, may in like manner affect the mind. In such instances, at first sight the mental derangement may not appear to bear any relation to the sexual organs, since the cause and effect are not in direct connection. A little study

or a cure of the vesiculitis will, however, demonstrate the relationship. These melancholy tendencies do not affect all dispositions alike. Many naturally vivacious and lively throw off their despondent feelings by stimulants and excitement. With such, however, the mental suffering when it does occur is very keen. A patient of this class, who had been a great sufferer from a severe grade of vesiculitis, and who is at the present time so nearly well of his local disease that he no longer experiences from it any disagreeable symptoms, states that several times before he had experienced relief in his attacks of melancholy he had contemplated suicide, and would surely have resorted to that extreme measure if he had thought that no other means would afford him permanent relief. Others of the mentally active class become irritable and quick-tempered. The author has one extreme case in mind where the individual so affected became so irritable that he often resorted to blows over trivial matters. This irritability became so marked that business dealings with him were impossible. Many of his acquaintances, according to his own admission, thought him crazy, and at one time he did have mental delusions in the form of ideas that people were plotting against him. A cure of all these symptoms, together with a disappearance of the irritability and a return to the natural disposition, resulted from treatment directed toward the vesiculitis, mental remedies having proved ineffectual or of temporary benefit.

Where there are symptoms of mental restlessness, insomnia is also liable to be a prominent feature. It is quite common for individuals suffering from this form of wakefulness to state that they cannot sleep without each evening imbibing freely of stimulants, preferably malt liquors, as English ales and beers. The preference given

to malt liquors is probably due to the fact that besides their alcoholic effect they have a local stimulating one on the urinary organs.

It is not rare for this class of individuals, if married or living with a mistress, to find themselves consumed with a jealousy or with suspicions that their companions are unfaithful. On investigation, however, it is usual to find that there is no real foundation for their suspicions, and many times they can be temporarily apparently rid of these vagaries by resorting to reason, only to lapse back to them again without justifiable cause in a short time.

Some instances of sexual mental perversion depend upon or have originated in a seminal vesiculitis which has been associated either with sexual craving, from which coitus gave little or no relief, or else with weakened sexual desire, which required in order to be aroused some extraordinary form of excitement. The fact must always be borne in mind, however, in this connection that, as a rule, mental sexual perversion is significant of a primary mental degeneration, seminal vesiculitis not coexisting; or, if it does coexist, that it is present as a result of the perversion, together with the excesses dependent upon it; in other words, that it is generally secondary to an existing mental state rather than primary to a non-existing one.

It would be impracticable to try to enumerate all the curious mental vagaries which are clinically encountered dependent indirectly on seminal vesiculitis. It is always well, however, to keep in mind the seminal vesicles as a possible source of trouble in examining professionally cases of sexual neurasthenia; and, in fact, in order to avoid mistake in examining all cases of neurasthenia in the male, the causes for which are obscure, even though

none of the direct symptoms such as have been studied are prominently present.

The severity of a seminal vesiculitis cannot be appreciated by the severity of the symptoms which have been enumerated, for sometimes light grades of disease may be accompanied by severe symptoms, and *vice versa.* Then, again, seminal vesiculitis may be very barren of symptoms. The author has in mind a case where, although marked disease existed in connection with one vesicle, there were no sexual symptoms; and, in fact, no subjective symptoms, aside from a profuse persistent urethral discharge, which had resisted all forms of urethral treatment, but which was permanently cured by treatment directed toward the cure of the vesiculitis.

Histories. On making inquiries into the histories of cases of subacute or chronic seminal vesiculitis it is most common to find that gonorrhœa has existed. There may have been several attacks of the disease, or the original disease may have relapsed on numerous occasions. Then, again, there may never have been but one attack, and that of short duration, years before, no trace of it ever having apparently recurred. Oftentimes associated with these gonorrhœas, or with their after-effects, there has been epididymitis. Many patients when questioned ascribe their troubles directly to a gonorrhœa, stating that they have never felt really perfectly right since their infection. Others trace their seminal troubles to the after-effects of gonorrhœa, such as cystitis, posterior urethritis, stricture, etc., or to the means employed to effect a cure of such conditions. The means employed, to which reference is usual, are sounds, strong, deep injections, and strong vesical lavage. Should, however, patients making such complaint be questioned closely it will almost always be

found that symptoms of seminal vesiculitis had already previously existed, mild, perhaps, and consequently attracting little attention; and that the modes of treatment enumerated, having been injudiciously applied, had resulted in lighting up these symptoms afresh and in augmenting their severity, besides, in some instances, introducing new ones such as had not hitherto appeared. Combined with the history of previous gonorrhœa the admission of habits of sexual and alcoholic excesses are frequent. Of these habits those of sexual excess are the more causative of trouble; in fact, sexual excess may be the only apparent cause for seminal vesiculitis, a gonorrhœa never having existed. Such excesses in adults, say in men of twenty-five years or over, comparatively rarely affect the vesicles. It is in the growing youth, however, where the bad effects are most aroused. This is especially seen in cases where boys have been made use of by grown women, who have taxed their young sexual powers to the utmost over considerable periods of time. A gentleman, a very aggravated case of vesicular disease, and one who had never been infected by gonorrhœa, told the author that he attributed the commencement of his trouble to the sexual intercourse in which he had indulged at the age of twelve years. His partners consisted of five sisters, next-door neighbors, averaging considerably older than himself, who sought pleasure in turn. Numerous other similar examples, not quite so aggravated perhaps as this, could be enumerated. This cause seems of sufficient importance and frequency to make it desirable for parents to be mindful of it, in order that their boys may be afforded some protection.

Alcoholic excess rarely, if ever, appears by itself as a cause. Unnatural sexual practices, such as masturba-

tion to any excess and the various methods adopted by libertines in order to produce the keenest sexual sensations by acts tending to overexcite the sexual centre or to keep it excited for a prolonged interval, are causative factors of importance in the history of these cases. The practices of libertines are probably in themselves sufficient in most instances, where they have been indulged in excessively and for considerable periods, to cause a vesiculitis, aside from the fact that gonorrhœa of an earlier date has coexisted. In most of them, however, there has been a former gonorrhœa; and this history should be expected, even though the early clap be no special factor in the existing vesiculitis, since individuals of this class, owing to almost unlimited exposures during their careers, rarely escape from having first and last all forms of venereal disease.

Abstinence from sexual exercise may, under certain conditions, appear as the sole cause for seminal vesiculitis. The local inflammation when of this nature is usually of a light grade, though the subjective symptoms, especially the mental ones, are apt to be severe. Among the cases illustrative of this condition it is customary to find those of young or middle-aged men, who have from six months to several years previously lost their sexual companions, since which time, generally from conscientious scruples or sorrow, and occasionally from lack of opportunity or medical prohibition, there has been a sudden and entire abstinence from the customary habit of sexual intercourse. Somewhat similar to these cases, though less common, are those of bachelors, generally in the neighborhood of thirty to thirty-five years old, who, though possessed of strong sexual inclinations, have always, owing to conscientious scruples or to their calling, by the exercise of will-power, kept these pas-

sions in abeyance, and have never consequently attempted sexual intercourse.

Another variety of this class are those who can be grouped as sexual triflers. These individuals, though always occupied with women or young girls, never do more than trifle with them, and never visit prostitutes. Nine chances out of ten, however, such persons are persistent masturbators, and it is to that practice rather than to abstinence that their vesiculitis should be generally attributed.

Abuses on the part of the male in connection with the natural sexual act, undertaken in order to avoid conception, are found to be causes quite frequently for vesiculitis, or for aggravating an existing inflammation of this character. Chief among these are premature withdrawal and the wearing of tight elastic rubber condoms, the rim of which consists of a rubber ring which encircles the base or middle portion of the penis, thus offering resistance to the ejaculatory act.

Rarely cases representing light grades of vesiculitis are observed where from the histories the only cause to be found consists of an apparent loss of nerve-tone to the muscular apparatus employed in the act of ejaculation. Instances illustrative of this condition may be seen associated with structural or inflammatory diseases of the spine and brain, and sometimes with any chronic debilitating disease. In these cases, however, a slight derangement of the vesicles is of little moment in comparison with the chief disease, and so deservedly attracts little attention. But in some instances the lack of nerve-tone is due to general nervous fatigue and exhaustion, and in these the resulting vesiculitis, by reason of its symptoms, in turn reacts on the nerves. Then the mental fret so caused aggravates the original state and

serves as a bar to convalescence, even though rest be attempted. It is in these latter cases that the vesiculitis is important, as a little attention paid to it will tend, in connection with mental rest, to hurry a cure, which otherwise would bid fair to be tedious.

In reviewing the histories of cases, inflammatory conditions being excluded, it can be stated in a general way that anything injurious to muscular tissue-development will injure the muscular apparatus employed in the act of ejaculation exactly as when applied to the muscular structure of other parts. Thus, if the muscles of these parts are worked too hard and abused, the tone and contractile power are diminished. On the other hand, if they are overstretched, as when the cavity of the vesicle is much distended or never called into action, they eventually become weak and flabby. If they are badly nourished, as the result of general conditions, such as poor circulation, defective oxygenation of the blood, or impaired nerve-action, these muscles, in common with those of other parts, become weak and capable of little executive action.

Physical Signs Resulting from Rectal Exploration. These signs are of the greatest importance, as it is by them that the existence and extent of disease are verified, the presence of which was suspected from the associated symptoms and histories. It is well, however, to state here that the forefinger, the member employed in this exploration, must be carefully educated in this particular, in order to enable it to draw definite conclusions, otherwise the aid derived from it is of as little value as the aid from an untrained eye would be in attempting to draw conclusions from the use of the ophthalmoscope or the cystocope. In accomplishing this education extensive practice is necessary—first,

in order to render the finger familiar with all the phases encountered in normal conditions of the parts, and, secondly, in order to enable it not only to detect abnormal conditions when present, but also to distinguish between their different grades, such as the consideration of the pathology of the part has shown to exist. The approved technique to be employed in making this digital exploration will be fully considered in the chapter devoted to treatment. In some individuals, especially in those inclined to be fat, where the vesicles are imbedded in a cushion of adipose tissue, it may be impossible for the expert finger to map them out if they be normal; but in most instances the outline of the normal sac, though oftentimes indistinct, can nevertheless be definitely located. In making an exploration of this nature the first thing to be done is carefully to note the condition of the prostate. This gland may be atrophied or hypertrophied. Atrophic conditions are rare and are of comparatively little importance, generally representing senile changes. Hypertrophy may be inflammatory, senile, or due to new growths. Senile hypertrophy is of little moment in this connection, since, although it may interfere with the mechanism of ejaculation, yet it occurs at that period of life when sexual activity, if not on the wane, is of slight importance. New growths are rare, and when they do occur the prominent symptoms do not relate to sexual disturbances. Inflammatory conditions of the prostate, however, are of importance, since, if they are not secondary to inflammation of the vesicles, they may involve those sacs by extension. As the feel of the inflamed prostate is or ought to be familiar to the surgeon, a minute consideration of the different phases presented will not be attempted here. After the finger has recognized the

condition of the prostate its posterior border should be felt for. In normal conditions this is easily distinguishable, especially in the middle, in the position of the median notch between the two so-called lateral lobes, though at either side it is not so well defined; and this is to be expected, since, in studying the anatomy of the part, it has been seen that the muscular prostatic fibres on each side extend back and blend with the body of the vesicle. This normal posterior prostatic border should feel firm, rounded, and unyielding. Beyond it in the median line, unless the bladder be very full, the tissue should be soft and yielding. On either side, however, the tissues should have more consistency and more firmness; and should the finger, making gentle pressure with its tip, be moved from side to side, the vesicles can be made out. If, then, the tip of the finger, having located the vesical neck, be moved gently backward and somewhat laterally in the anatomical direction of that organ much of the body of the sac can be felt as an indistinct pear-shaped mass. When everything is normal the vesicles always appear to be composed of soft, elastic tissue. Sometimes, when the perineal and levator ani muscles are tense and the individual thick-set, it may be difficult to get all this information by rectal manipulations, but with practice such instances will be found to be very few. In pathological conditions where the inflammatory process is confined largely or wholly to one or both of the seminal vesicles the diagnosis of a vesiculitis is usually easy, for then the tissues composing the affected sacs are no longer soft and elastic, but become more or less rigid and defined, sometimes to such an extent that the entire lower two-thirds of the vesicle, the portion in reach, can be perfectly demonstrated. In such instances, however,

the vesicle does not usually appear normal in size, but is apt to be inflated by overdistention. This is owing to the fact that, being inflamed, it has to a degree lost its expulsive power. If now pressure at all firm be made on this mass by the tip of the finger, it will, when such is the case, be found to be indistinctly fluctuating and somewhat doughy. Also, after the pressure has been removed, the mass will not recover fully its former shape, but it will remain partially collapsed, as it were; and associated with this partial collapse the patient will complain that something is dripping from the end of the penis. If this complaint be investigated, it will be found that pathological vesicular fluid, such as has already been described, to the extent oftentimes of half a drachm, and occasionally more, up to two or three drachms, has flowed from the meatus as the result of the pressure exerted on the vesicle. Although, as has been said, dilatation of the vesicular cavity is liable to be a feature of this grade of inflammation, still it varies much in degree, and sometimes it is so slight that it cannot be distinctly demonstrated. In these latter instances the vesicles feel firm and thin. When a vesicle feels large, however, it does not follow that it is greatly distended, for such a feel may be, and often is, due to perivesicular inflammation. This being the case, the mass is much harder and less compressible than is usual where the inflammation is confined to the sac-walls. Its contour is also nodular and somewhat irregular, and on making pressure with the tip of the finger the cavity of the sac is generally found to be somewhat distended, vesicular fluid being pressed out along the duct. Pressure so exerted, however, does not make nearly so much impression on a vesiculitis of this nature as on the variety just previously considered. When perivesicular

inflammation is very extensive it may fill up all the space around and between the vesicles, extending downward to the prostate, laterally to the inner walls of the pelvis, and upward beyond the reach of the finger. Such being the case, the posterior border of the prostate is obliterated, it being impossible to determine just where that body ends and the induration begins. Pressure on this extensive induration shows the whole space back of the prostate to be firm, hard, and unyielding, everything being firmly adherent to the prostate and the pelvic walls. Sometimes the location of the vesicles in this condition can be made out after a fashion by an extra piling up of the exudation round about them. When partial resolution takes place in such an extensive exudation a marked pitting appears in the space between the vesicles, and the whole mass becomes somewhat movable. As this absorption progresses still further, what at first seems to be the posterior border of the prostate can frequently be made out. This border, however, extends further back than normal, and generally has a sharp, crusty edge rather than a smooth one. Such a posterior border is in reality not prostate at all, but a fringe of exudation adherent to the posterior border of the prostate, the sharp edge representing the portion where reabsorption of the exudate is chiefly taking place. Where an extensive exudation of this nature is recent and acutely inflammatory it is not hard and firm to the feel, but œdematous, such as is usually described by the suggestive term of boggy to the feel. If suppurative changes ensue this bogginess persists, even though the condition be most chronic. Between these extremes all grades of perivesiculitis may exist, but it seems hardly worth while to attempt a description of the intermediate varieties. It is well to note, how-

ever, that sometimes, and, in fact, quite frequently, these processes are largely, if not wholly, unilateral, as can easily be detected by the feel.

Another point to be considered in this exploration is the amount of local pain or tenderness which it provokes. Chronically inflamed vesicles, especially when distended and free from perivesiculitis, are very tender when first touched; and if pressure at all firm with the tip of the finger is exerted at the time of the first examination numerous sharp, painful sensations, both local and reflex, are excited. These pains are frequently so severe that the patient complains of feeling faint, and occasionally faintness may be so pronounced, especially if the exploration be prolonged, that momentary loss of consciousness may result. Where, however, the perivesiculitis is extensive and chronic these sensations are not liable to be prominent. In such instances, in fact, pressure on the indurated area, away from the vesicles, may not be in the least painful, while pressure directly over the sac is only moderately so. Attention is called to the fact that emphasis is laid on the point that it is the first exploration which is liable to be so painful in certain of these chronic conditions, later manipulations, as will be seen in considering treatment, being less and less so, until finally they provoke no sensations of this nature. In other words, in those conditions the pain and tenderness at first provoked are neuralgic in character in contradistinction to the pain and tenderness experienced under like conditions in acute seminal vesiculitis, which are inflammatory; and should repeated manipulations in these latter conditions be attempted, the pain and tenderness provoked thereby, instead of growing less and less, would be augmented by each

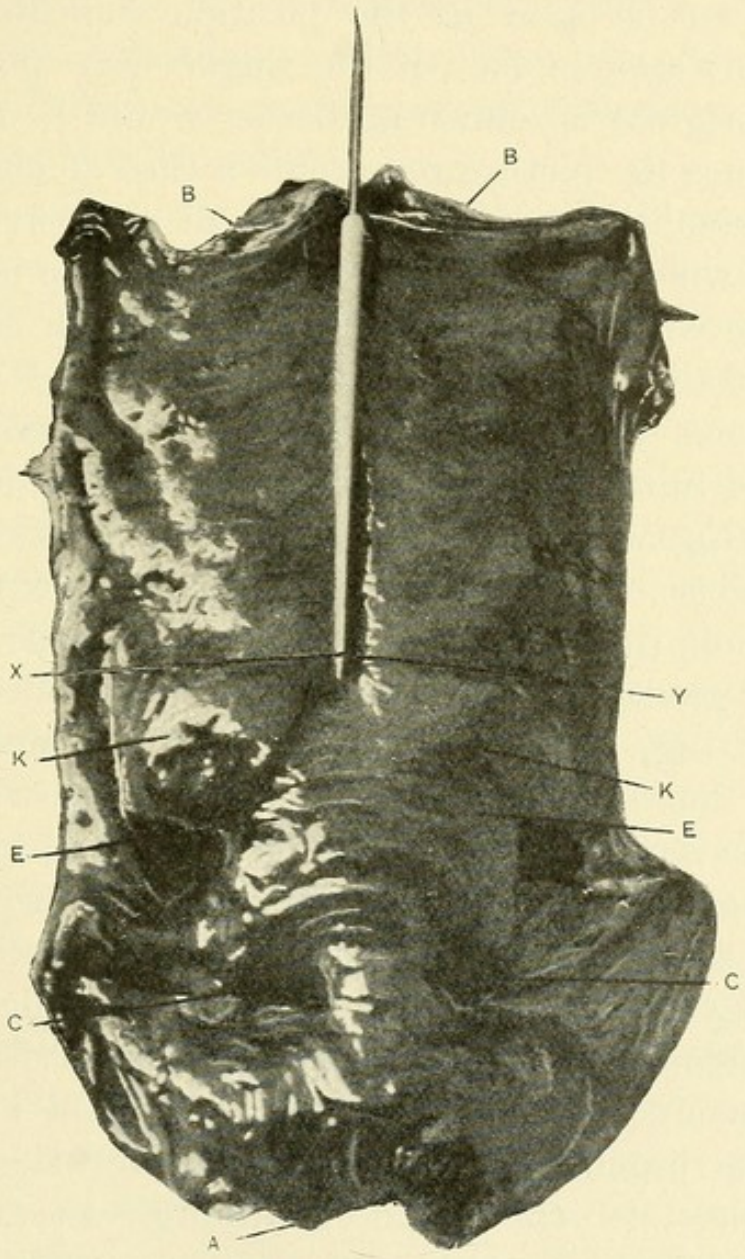
exploration, together with the tumefaction and other evidences of an increasing inflammation.

When seminal vesiculitis exists, due to a want of muscular tone, this condition is oftentimes indicated to the finger on making a rectal exploration by reason of the generally relaxed condition of the various groups of muscles encountered in this investigation. Under such conditions the rectal sphincter muscle offers little resistance to the finger; the contractions of the perineal group and of the levator ani, usually vigorous, can hardly be felt; and the prostatic body can be moved about with ease. Under these conditions pain and tenderness, due to direct pressure on the vesicles, are not apt to be present, at least to a marked degree. When, on the contrary, active inflammation exists in the vesicles, all these muscles can be felt to be in a state of spasm, the rectal sphincter offering much resistance, the levator ani being prominent and the prostate immovable.

Fig. 18. Here the attempt has been made to picture the features presented to the rectal feel in one of these pathological conditions, such as have just been described, in order to impress on the reader's mind as vividly as possible the points considered of importance in this connection. The picture represents the inner mucous surface of the rectum and of the bowel for a short distance above the rectum. A represents the rectum; B B, the cut section of the bowel above the rectum. A cut has been made through the bowel-wall, beginning at the back of the anus and extending backward and upward in the direction of and beyond the coccyx. These lateral cut edges of the bowel have then been spread apart and fastened to a flat surface, thus exposing its mucous surface. C C represents the deep membranous urethra with its bowel covering, a tack being

driven through the bowel and into the back structure on each side of the urethra in order to make that part visible. Just above these two lateral urethral tacks the

FIG. 18.



The Rectal Aspect of a Case of Chronic Seminal Vesiculitis.

bulging prostatic body is well exposed. Higher up on each side of the prostatic body, and just below the pointers E E, are seen two dark spots marking inden-

tations. These spots represent the location of two more tacks, which have been driven in to bring out more distinctly the contour of the prostate. The pointers E E indicate the position of the posterior border of the prostate. In this picture, however, there is no posterior border to be seen in the position indicated by the pointers; and, in fact, if the finger were placed there in the original specimen no border would be felt. This is because the picture represents a case of chronic seminal vesiculitis, complicated with an extensive perivesiculitis, which has filled up the whole space back of the prostate with firm inflammatory exudation as high up as the cord X Y, which has been stretched across the specimen. The blade of a scalpel has been tucked under the cord in the middle of the specimen in order to show the pitting at the upper border of the exudation between the vesicles. In the picture, owing to the extent of the exudation, this pitting is not so marked as occurs in lighter grades of perivesiculitis. To the outer sides of this pitting, below the cord X Y and above the two lateral depressions which mark the spots where tacks were driven to locate the upper lateral borders of the prostate, are to be seen two bulging prominences, K K, which represent the seminal vesicles imbedded in a thick layer of inflammatory exudation which entirely surrounds them. Here, although the cavities of the vesicles are distended, still the exudation is so great that the prominences are firm and but slightly compressible. In this picture, although the finger can reach the lower portion of the pitting below the end of the handle of the scalpel, it cannot reach to the posterior edge of the exudation or over the back portion of the vesicular prominences.

Tubercular Seminal Vesiculitis. This form of disease

may be acute, subacute, or chronic. The acute variety is very rare. The other two forms are common. These diseases, however, will here require comparatively brief notice, not because they are unimportant, but because in most respects their clinical features are the same as those pertaining to the corresponding grades of non-tubercular inflammations, such as have just been considered. Still there are some points of difference, and it is these which will be noted.

In acute tubercular vesiculitis the local pain and tenderness are not liable to be so marked as in the gonorrhœal variety, and reflex symptoms are not so prominent. There is a form of acute vesiculitis, however, in which both tuberculosis and gonorrhœa appear as causes. This form apparently is much commoner than the pure and simple tubercular variety. When this double cause exists the symptoms are usually severe and similar to those attending the acute gonorrhœal form. Subacute seminal vesiculitis is more often due to tuberculosis than to other causes. The symptoms also attendant on this grade of vesiculitis, when tubercular, are not apt to be so marked as those associated with the other varieties; and sometimes this form of disease may have existed for a considerable period without having caused the patient any inconvenience, the symptoms having been so slight as to be disregarded. A certain amount of sexual disturbance, however, is almost always present, sufficient in amount to be a cause for complaint, should the individual be inclined to exercise that function; and should the urine be examined, shreds from the ejaculatory ducts or deep urethra will almost invariably be found, together oftentimes with some free pus-corpuscles. A slight urethral discharge is also frequently present, sufficient to glue together the lips of the meatus.

If in a case such as this a sound be passed, a deep urethral injection given, or, worst of all, a gonorrhœa contracted, then any of the numerous symptoms of vesiculitis may come suddenly into prominence, the slumbering disease being rekindled, as it were, by one of these offending factors.

Associated with chronic tubercular disease of the parts there are always marked symptoms. It will be observed, however, that in the intervals of improved general health these symptoms often also improve greatly, much more so, in fact, than occurs under like conditions in the case of other forms of chronic vesiculitis. With this disease, as with the subacute variety, inflammatory urethral and bladder affections often coexist as symptoms or complications.

In investigating all forms of tubercular seminal vesiculitis, a careful inquiry into the patient's own and family history, together with a thorough inspection and general physical examination, is most important, as by so doing tubercular evidences or tendencies sufficient to impress the surgeon's mind are usually apparent. Among these evidences the characteristic tubercular epididymitis is present often enough to deserve special mention. In the histories oftentimes causes, such as have already been studied, appear, partially at least, to account for tubercular disease in the vesicles; but in some instances there is no special apparent cause, aside from the general tubercular diathesis, to attract the inflammatory process to these parts. In such instances the disease usually begins insidiously as a subacute vesiculitis, with few attendant symptoms, finally becoming chronic, and manifesting itself by numerous and severe accompaniments. It has long been recognized that gonorrhœa in a tubercular subject is a disease to be dreaded; in fact,

it is common for such individuals to ascribe, and rightly, too, the commencement of a permanent deterioration in health to this agent, which may have furnished the tubercle bacilli just the conditions requisite for their propagation and proliferation. In such instances the seminal vesicles are the parts which generally afford these germs their first permanent foothold.

As regards physical signs resulting from rectal exploration, there is nothing by which acute tubercular vesiculitis can be distinguished from the gonorrhœal variety. In the case of subacute tubercular disease, however, the finger usually detects more thickening of the sac walls and more distention, together with less tenderness than is usual in the case of the non-tubercular forms. Sometimes also with this grade of disease a moderate amount of perivesiculitis may be present—a feature which is never associated with simple subacute vesiculitis. Chronic tubercular vesiculitis is almost always associated with a marked degree of perivesicular induration; but, as such an induration is a frequent accompaniment of other varieties of chronic vesiculitis, it is not necessarily a distinguishing feature. In the chronic, as in the subacute, tubercular cases comparatively little pain or tenderness is usually experienced from the exploratory rectal manipulation. If, however, several such manipulations be undertaken at short intervals in this class of cases, considerable pain and tenderness may eventually be provoked, occasioned by a stirring up of the tubercular processes; whereas with other varieties of these same grades of inflammation the first rectal manipulation usually provokes the greatest pain and tenderness, subsequent ones being attended by less. Considerable stress will be laid on this point in the chapter on treatment.

In cases where the physical signs point toward tubercular involvement of the vesicle, it is always well to examine the inflammatory material expressed from the sac for the tubercle bacillus in order to confirm the diagnosis.

It has not seemed worth while to endeavor to enumerate the clinical features attendant on malignant disease of the vesicles, or on the other rare pathological processes which may affect these parts, since, owing to the meagre clinical records attached to the few cases of this description which have been reported, anything approaching completeness in such an attempt would be impossible.

CHAPTER V.

DIFFERENTIAL DIAGNOSIS.

If one will familiarize himself with the clinical features of seminal vesiculitis in its various forms and intensities, there need be little danger of mistaking the disease. Still, as it has been customary until very recently either to ignore the existence of these organs, or, at most, to give them but a passing thought in making a diagnosis, very many errors have resulted. While some of these errors have been unpardonable, others have been natural, since the standard authorities have ascribed to various other conditions many of the symptoms really dependent on seminal vesiculitis. It has, therefore, seemed well to devote some space to a consideration of the diseases such as might be, and probably often have been, mistaken for these inflammations. In so doing, the diseases which may simulate acute seminal vesiculitis will receive first attention. These are the acute varieties of prostatitis, cystitis, and posterior urethritis; also stricture, peritonitis, acute appendicitis, acute epididymitis, acute pyelitis, kidney colic, and acute inflammations pertaining to the rectum.

Acute prostatitis is probably mistaken for acute seminal vesiculitis oftener than any other disease. Occasionally these two diseases coexist. An acute suppurative prostatitis ending in abscess-formation, the pus finally discharging itself into the bladder, is often mentioned in literature. The firm muscular structure of the prostate, however, together with an absence of

pathological specimens illustrating instances where such a condition of affairs has taken place, has made the author skeptical, if not concerning the existence of such cases, at least of their frequency. Most instances of this nature probably represent abscess-formation in connection with perivesiculitis. In cases where there are much vesical tenesmus and frequency of urination, attended with pain and supra-pubic tenderness, together with free pus in the urine or thick, deep urethral shreds, acute cystitis or posterior urethritis may be simulated; or if associated with frequent urination and tenesmus extensive deep urethral spasm, complicated in some cases with more or less tumefaction of this region, exists, the result being a fine, dribbling stream, or in extreme instances absolute retention, then urethral stricture is simulated. In all these cases examination per rectum will demonstrate acute seminal vesiculitis, which is sufficient in itself to account for all the symptoms. In cases, however, where organic stricture is simulated, besides demonstrating the existence of the vesiculitis, it may be necessary to demonstrate the spasmodic nature of the urethral obstruction, which can easily be done by passing a blunt steel sound just through the membranous urethra. Deeper than that it is not necessary or advisable to go, for fear of intensifying the vesicular inflammation. When pelvic peritonitis is present as a complication the source of the trouble may be overlooked, the peritoneum being considered the seat of the disease; or when peritonitis exists, together with an exudative perivesiculitis so extensive that it can be detected by abdominal palpation, then acute appendicitis may be suspected. Sometimes an acute epididymitis may coexist, in which case the whole attention may be directed to that part, the vesiculitis being overlooked. Again,

where the pain is radiated upward toward the kidney, there being much pus in the urine, acute pyelitis may be diagnosed; or if such pain exists, there being at the time of examination little or no pus in the urine, then the trouble may be attributed to some form of renal colic. Where pain is referred to the rectum, a superficial observer might diagnose the case as one of localized or general rectal inflammation.

The diseases which may be, and often are, confounded with the different forms of subacute and chronic seminal vesiculitis are as numerous and varied as the symptoms, both direct and indirect, which are attendant on these conditions, the error in diagnosis usually being to consider a prominent symptom the disease itself rather than simply a symptom of disease. As the diseases which might be so mistaken for these forms of vesiculitis are many, a mention in detail of them will not be attempted, but the subject will be considered in a somewhat general manner, emphasis being laid on the points which have seemed to the author in his clinical studies to be of prime importance. It is well to divide this subject into two parts—first, and less frequent, instances where from the symptoms present seminal vesiculitis is wrongly supposed to exist as a cause; second, instances where symptoms due to a seminal vesiculitis are mistaken for various other diseases.

Under the first heading, attention is called to a class of individuals very poorly developed physically, suffering really from general debility, who have focused their attention on their sexual organs to such an extent that supposed disease in that part is held to be the source of their ill health. Their complaint is sexual weakness. If they attempt sexual intercourse, the erection is weak, the emission premature, and there is a feeling of exhaus-

tion or prostration after the attempt. They are often troubled by frequent nocturnal emissions, and sometimes emissions occur at the mere sight of an attractive woman. A general examination, however, will show that the sexual organs are no weaker than their other organs. Their lung-expansion will be found to be defective, and their circulation poor. In several instances seen by the author defects in the heart were discovered, some of which appeared to be congenital. Any physical or mental attempt will generally cause exhaustion. An examination of the vesicles will show no localized inflammation, and treatment directed toward these organs will do no good. If, however, the general physical condition can be improved by agents, directed, for instance, toward the heart, lungs, or alimentary canal, it will be found that a corresponding improvement in the sexual symptoms will take place.

There is another class of individuals, often physically robust, and sometimes athletic to such a degree as to be famous, who present themselves to the surgeon complaining of sexual weakness. Their special complaint usually is that erection fails them on attempting coitus, there being no ejaculation, or that the ejaculation, associated with a failure of erection, occurs as soon as the act is attempted and before an entrance is effected. Their sexual sensations are usually all right, and they generally state that they often awaken in the morning with a strong and natural erection; and, in fact, that their erections resulting from sexual thoughts and surroundings are natural and strong. An examination of the seminal vesicles will show the organs to be normal. These are instances of functional impotence, the sexual failure being due to shyness, fear of contagion, dislike, etc. Functional impotence is met most frequently in

young unmarried men little used to female society. With them the first attempt at coitus having resulted in a failure, more or less complete, from one of the above enumerated causes, subsequent attempts are liable to be worse, there being less confidence. Sometimes they can perform the act perfectly satisfactorily with some one woman of whom they are fond or who has their confidence, failure following like attempts undertaken with others. In such instances fear of contagion or fastidiousness rather than shyness may be the cause. Sometimes a married man, at first apparently all right sexually, may gradually or suddenly find himself functionally impotent or sexually weak with his wife. This is usually the result of some incompatibility, the fault lying with the wife. The author has in mind an extreme case illustrating this condition. A very nervous man of thirty-six years sought advice for sexual weakness such as has been described. He had been married about five years, and for a time had experienced no difficulty in performing the sexual act, and had, in fact, impregnated his wife. His wife, however, apparently had no feminine instincts. She experienced no pleasure from the sexual act; in fact, she thought it vulgar and unbecoming, submitting to it only as being a part of the marital contract. When her husband was in the midst of his sexual attempts she frequently essayed to divert her mind by reading, asking him from time to time if he were through. The result was at first a marked dampening in the sexual enthusiasm of the husband, followed later by a weakness so marked as to be little short of impotency. This state of affairs may be seen in widowers who have lost dearly beloved wives. All these individuals, if happily married, cease to complain of their sexual apparatus, that function becoming normal again

in every respect. Another class coming under this first heading are those which really belong to the alienist. In the introductory chapter the point has been emphasized that hitherto, judging from the writings on the subject, this class has been supposed by the medical profession at large to be very extensive and numerous. Such, however, the author holds is not the case, these ideas being prevalent only because no one has heretofore demonstrated the importance of seminal vesiculitis or classified the symptoms dependent on it. Many idiots and others mentally deficient will not attempt sexual intercourse, though persistent masturbators. Such creatures, although incapable of describing their feelings, have often erroneously been confounded with cases of sexual weakness. It is needless to state that no vesicular disease is present in these idiot cases; in fact, it would be interesting to investigate whether their sexual apparatus be fully developed. Some forms of paranoia, mania, melancholia, and structural disease of the brain may have some such symptoms associated with them as to make it worth while to examine the seminal vesicles in order to exclude disease localized in that quarter.

Rarely hysteria in the male may give rise to symptoms exactly similiar to those associated with seminal vesiculitis. Such cases are often very misleading, and unless the surgeon exercises care and is skilled in the rectal feel he generally diagnoses them as seminal vesiculitis. The reason for this is that these hysterical individuals always hold themselves most rigid when an attempt at rectal digital exploration is made, and cry out apparently with great pain as the finger attempts to examine the condition of the vesicles. If, however, the examination is persisted in and completed, the vesicles

will be found to be all right. It will also be found that the individual complains of just as much pain no matter against what or in what direction the tip of the finger is pressed. If a mistake be made, and one of these cases be diagnosed as seminal vesiculitis and the regular treatment advocated for that disease be attempted, no good results are apt to follow; but new and wonderful groups of strange and apparently distressing symptoms are liable to be complained of as the results of the treatment.

We now come to the consideration of the second part, which includes instances where symptoms of seminal vesiculitis have been mistaken for various other diseases. Symptoms relating to the urethra and bladder will receive first attention, as being the chief causes for error. Persistent urethral discharges, when simply symptomatic of a vesiculitis, have been so frequently mistaken for localized urethral disease that the author has deemed it wise to write a thesis on this subject (*Journal of Cutaneous and Genito-Urinary Diseases*, June and July, 1894), in which many cases are cited which had hitherto subjected themselves to all known forms of urethral treatment, in a number of instances at the hands of surgeons most distinguished in genito-urinary diseases, without having experienced any relief. Very many cases of vesiculitis have been diagnosed cystitis or posterior urethritis, granular urethritis, or stricture, and treated as such. If the means of treatment employed in these mistaken diagnoses have been mild and gentle, the results have usually been of a negative nature. If, on the other hand, they have been severe, such as strong deep urethral injections or lavage, strong topical applications through the endoscope, the passage of large and tight sounds, especially through

the entire length of the deep urethra, then the results have probably been disastrous. On the theory, which has been quite prevalent, that all persistent discharges are due to urethral stricture, internal urethrotomy frequently and external urethrotomy occasionally have been resorted to in the hope of accomplishing a cure. It is needless to state that the results from these operations undertaken in such conditions are disappointing to both surgeon and patient. The author was once consulted by an individual with seminal vesiculitis in whose mind the idea that urethral stricture was the cause of his trouble had become so firmly fixed that internal urethrotomy had been resorted to seventeen times. The fact that a cure had not resulted from these numerous attempts was ascribed to the fact that none of them had been really thorough, there being inequalities in the canal always to be found after every operation. The mistake of diagnosing chronic seminal vesiculitis as chronic pyelitis is not uncommon, and sometimes considerable study and attention are required in making the correct differential diagnosis. It is in the cases of chronic seminal vesiculitis, complicated by bacterial infection, that the resemblance to pyelitis is usually most marked. Here there may be no symptoms pointing toward bladder-irritation, but still in the urine some pus and numerous bacteria, causing a glazy, murky appearance, together with a trace of albumin. Examinations of the bladder by searchers, cystoscopes, etc., usually fail to show anything pathological in connection with that organ, although such manipulations are frequently followed by reactionary chills. The vesicles being overlooked, the diagnosis of pyelitis naturally follows, the chill being looked upon as especially indicative of renal reaction. If, however, in one of these

deceptive cases the vesicles be examined, they will be found to be diseased; and should the urine be voided after these sacs have been largely emptied of their contents, by means of rectal digital manipulation, the fluid will be found to be charged with bacteria and pus in greater abundance than usual; and should the microscope be employed, the vesicular origin of much of the sediment will be demonstrated. The urine also voided subsequent to such a manipulation will frequently be exceptionally clear. On the other hand, contrary to what would be expected with a pyelitis, flushing the kidneys in these cases, together with the administration of drugs tending to sterilize the urine, are measures attended by negative results.

Sometimes where the symptoms simulate those attendant on vesical inflammations, vesical calculus, tumor, or tubercle may be thought to be present.

Chronic prostatitis is the disease alleged in very many instances to be the cause of symptoms really dependent on a chronic seminal vesiculitis. The true clinical features, however, of chronic prostatitis are mostly negative, except in those instances where hypertrophy of the gland results, occasioning thereby symptoms due to defective urinary drainage. Posterior urethritis is a disease often supposed to be chronic prostatitis; in fact, some years ago, before deep urethral diseases had been thoroughly studied, it was customary to ascribe to a prostatitis most deep urethral symptoms. Consequently the term chronic prostatitis was in more frequent use then than at present.

When pains or unusual sensations due to a vesiculitis are referred to the scrotum or testicles, these parts are usually examined carefully by the patient or his attending physician; and should a varicocele, as is fre-

quent, a hydrocele, a cyst, or, indeed, anything pathological or strange be discovered, then the cause of the symptoms is supposed to have been found. The author has on numerous occasions been consulted by individuals of this description. They generally announce that they have something, frequently a varicocele, which is giving them much trouble. They are so sure that the varicocele, for instance, is the cause for their suffering that they rarely ask the consultant's opinion on that point, but simply want to know if he will remove the offending cause, together with the details of operation, cost, etc. It is always well for the surgeon to be on his guard with these cases, for if he operates as the patient desires the result is disappointing to all concerned. The way to manage them is to advocate, first of all, a cure of the vesiculitis. Then, if the scrotal condition still gives trouble, it can be remedied later.

Another frequent source of error is to suppose that some pathological condition of the rectum exists to account for the vesicular symptoms. With this object in view, a careful examination of that organ is often made, and, especially if the surgeon be enthusiastic, something is usually found, be it an abrasion, fissure, hemorrhoid, ulcer, spasmodic sphincter, mucous tab, or even a mucous pouch above the sphincter. This something is then treated and removed. A number of cases of chronic vesiculitis have come to notice where rectal operations, often of a severe nature, have been undergone in a futile search for relief. One of these cases, besides having had his urethra cut and a varicocele removed, had had his sphincter stretched on numerous occasions, rectal tabs removed, and so-called mucous pouches cut out. Another operative fad much in this line, an example of which has been observed, was the removal of

the coccyx for reflex vesicular pain located in that part. Some cases of light-grade seminal vesiculitis do get a certain amount of benefit from general rectal treatment. This is probably owing to the accidental pressure exerted on the distended sacs by bougies, specula, instrumentation, manipulation, etc. For this reason the stretching of the rectum by certain specified specula, the introduction of rectal bougies and the like, have been advocated from time to time, generally by irregular practitioners, as a cure for sexual weakness and kindred complaints in the male.

Indirect reflex symptoms may be misleading and puzzling; in fact, allusion has already been made to a case which the author mistook for intestinal colic. As, however, these symptoms are so varied it has not seemed worth while to try to consider them from the differential diagnostic point of view, an enumeration of them in the chapter on clinical features being all that has been deemed necessary.

From the mental symptoms presented in many cases of subacute or chronic seminal vesiculitis, it has been usual, as has been stated, to locate the cause of trouble in the head. Although this error has been frequent, and the avoidance of it is most important as regards prognosis, still the discussion of the subject requires but little space in this connection. The great point with these cases is to bear the seminal vesicles in mind, to question the patient regarding localized symptoms of vesiculitis, and, lastly, to examine the vesicles themselves by means of the digital rectal feel. If seminal vesiculitis is found to exist, then the chances are that the mental symptoms depend upon it, as can be definitely demonstrated by their disappearance as a cure of the vesiculitis is effected.

CHAPTER VI.

TREATMENT AND PROGNOSIS.

The treatment to be pursued in a given case of seminal vesiculitis depends much upon its quality—that is to say, measures which would be efficacious in the subacute or chronic varieties might be, and probably would be, extremely harmful if undertaken in acute or tubercular conditions. It is well, therefore, in treating this subject to subdivide it according to the grades of disease requiring differences in treatment. In detailing the treatment appropriate to these different grades, the results to be expected, or, in other words, the prognosis, will also be considered. The subdivisions to be made are as follows: 1. Treatment of acute. 2. Treatment of subacute and chronic. 3. Treatment of the tubercular forms of seminal vesiculitis.

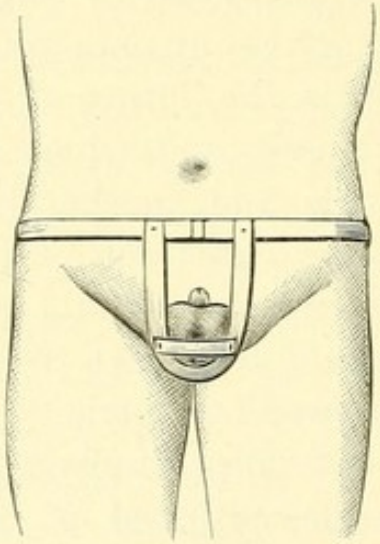
Treatment of Acute Seminal Vesiculitis. The most important—in fact, the chief—feature in the treatment of this condition consists in absolute rest in bed until all localized inflammatory symptoms have disappeared, and until all inflammatory evidences to be discovered by the rectal feel have been either entirely absorbed or so reduced that further rest is found to be negative of good results. The patient should lie flat on his back, with his shoulders low. It is at times even a good plan to raise the foot of the bed, as is done by gynecologists for some pelvic inflammations. By so doing all blood-tension possible is removed from the region of the vesicles. Then the testicles, regardless of whether they

be involved in the inflammation or not, should always be drawn up and supported on the pubic-bone, thus removing all drag and pull from the vasa deferentia. The author, in an article on the requisites of a suspensory-bandage (*Journal of Cutaneous and Genito-Urinary Diseases*, February, 1894), has described, together with a diagram, the appliance required in cases where it is necessary to maintain this position of the testicles. As this description is of importance in this connection, it has seemed well to quote it.

"In cases where it is necessary for the patient to remain in bed with his testicles supported, as is frequently required in active inflammatory conditions, such as acute epididymitis, the forms of support which we have already considered, and which apply to walking cases, are not suitable, and another device is called for. In these inflammatory cases the patient should lie flat on his back. His testicles should not be allowed to hang at all, but should be drawn up and placed on the pubic-bone, and allowed to remain there. Fig. 19 represents the required form of support in such instances. This support can be adjusted at the bedside, firm muslin and safety-pins alone being required. A broad waistband is first firmly applied, and then to this a broad sling is pinned, which includes the testicles, holding them in their suprapubic position. The penis naturally lies upward on the hypogastrium, as seen in the diagram. To prevent this sling from slipping up, back-straps, which cannot be represented in the drawing, are adjusted; and to guard against the testicles slipping over the rim of the loop, in case the patient is restless, a strip of muslin is pinned across, as seen in the figure. Oftentimes, however, in these cases the inflamed parts are so tender that they cannot be brought directly in

contact with any support, as represented in the figure, but require to be done up in poultices, fomentations, cotton, wool, etc., as the case may be. Still, no matter in what substances they may be enveloped, the position of the testicles, resting on the pubes, should be maintained; and such can readily be done by the apparatus just described, only in these latter instances the loop fastened to the waistband should be made extensive enough to include the scrotal wrappings."

FIG. 19.



Reclining.

With many of these cases, during this period of rest in bed, comparatively little other treatment is necessary aside from close attention to the bowels. These organs should not, on the one hand, be scoured by violent cathartics, nor, on the other, be allowed to become constipated, since both such conditions are unfavorable to the vesiculitis. Mild laxatives should be daily administered, and should these not be in themselves sufficient their action should be aided by rectal enemata of hot water, or, in more stubborn cases, of hot water to which

common salt to the amount of a tablespoonful or two to the quart has been added. In administering these enemata it will be found in most cases advisable to employ a long, soft-rubber rectal-tube, the end of which can be gently pushed up beyond the sigmoid flexure rather than the ordinary short, hard-rubber nozzle. Hot fomentations or poultices, extensive enough to cover the entire lateral hypogastric region corresponding to the vesicle involved, are frequently very beneficial during the early stage of the disease, especially if there be much pain associated with abdominal tenderness. After, however, the fever falls and gushes of pus from the affected vesicle appear in the urine, then it is better to discontinue these applications. Instead of hot agents cold ones may in a few instances be of value, an ice-pack being employed. A trial of cold applications, however, is recommended only in case hot ones have failed to occasion relief, and even then their employment should be of but a few days' duration. In many instances during the acute stage anodynes sufficient to render the patient comfortable are required. Suppositories of morphine (gr. $\frac{1}{4}$) and extract of belladonna (gr. $\frac{1}{8}$), every six to eight hours, often accomplish this result in a very satisfactory manner; but in cases where the pain is intense and paroxysmal, such as is liable to exist where rest in bed has not been promptly enforced at the beginning of trouble, a full dose of morphine in the form of an hypodermic injection may be desirable. In many instances after the pain has once been subdued by morphine a lighter anodyne, such as codeine, in occasional doses of from one-sixth to one-fourth of a grain, will be found sufficient to insure comfort. The administration of anodynes in the engorgement stage of an acute vesiculitis is recommended not only in order to

render the patient comfortable, but also, and especially, in order to rid the inflamed part of muscular spasm and tension, both of which serve to aggravate the inflammation. As soon as the fever breaks and the vesicle begins to discharge itself, then the administration of anodynes should be discontinued. Phytolacca decandra is a drug which is often of value in the engorgement stage of this disease, by exerting a favorable effect on the pain and inflammation. It may be given in 10-minim doses of the tincture every four to six hours. Iodide of potash also, in this as in other inflammations, may modify the inflammatory process. This drug in 5 to 10-grain doses may with benefit be combined with phytolacca decandra. If the patient has a strumous tendency, convalescence may be hastened by the administration of cod-liver oil in the later stages of the disease. Treatment by digital manipulation of the vesicle by the way of the rectum is contraindicated. From time to time, however, the finger may be introduced in order to note the progress of the disease. All local forms of treatment directed toward the bladder or urethra are distinctly injurious. In the later stages of the disease, after the contents of the vesicle are discharged along the ejaculatory duct, marked signs of urethral irritation may appear, for the relief of which the internal administration of balsamics and antiblennorrhagics is often useful.

The first stage of the disease, the end of which is marked by the free discharge of pus along the ejaculatory duct into the prostatic urethra, is usually of from ten days to two weeks duration, after which time it generally requires two weeks for the inflammation to subside; in other words, rest in bed for a month may be requisite, the patient being allowed on his feet only

when the rectal touch fails longer to show evidences of vesicular inflammation.

Numerous surgeons in dealing with the management of acute seminal vesiculitis have advocated as routine treatment opening the affected sac and draining off the accumulation of pus by means of a perineal incision. Reich, of Vienna (*Journal des Praticiens*, May 13, 1894), even reports that Von Dittel has gone so far in one of these cases as to incise the entire length of the sac. The author in his experience has yet to see one of these cases which has required perineal drainage in order to give vent to the purulent vesicle contents, and he holds ablation of a vesicle under these conditions to be a surgical mutilation which is wholly unwarranted. Attention has already been called to the fact that occlusion-cysts in connection with the seminal vesicles either do not exist, or, if they occur, that they must be of extreme rarity, as no anatomical demonstration of this condition has ever as yet been reported. When acute collections of pus become sufficiently voluminous to distend the vesicle to a certain extent, enough material finds vent out of the sac along the ejaculatory duct to relieve the pressure within, and to prevent a rupture, associated with an acute burrowing of pus, from taking place. It is not denied that there may exist a condition of acute seminal vesiculitis, complicated with an acute purulent perivesiculitis, which may require and demand speedy drainage by means of a free incision through the perineum; but such a severe condition of affairs is happily infrequent.

The prognosis of acute seminal vesiculitis is usually good, provided the individual affected is not strumous and the methods of treatment herein advocated are followed out. There are usually no symptoms left

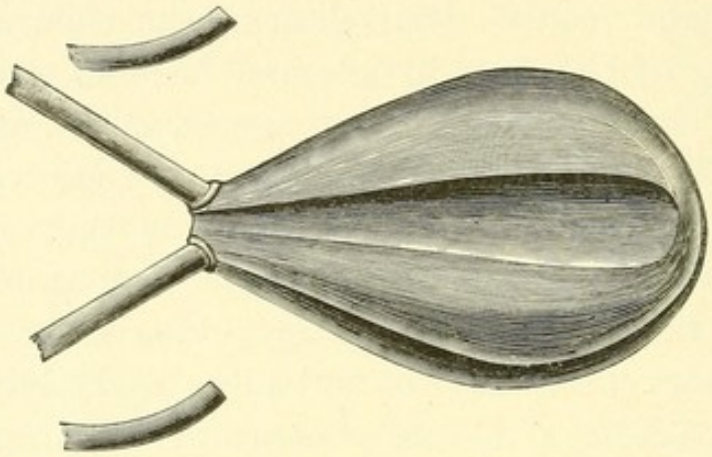
behind to serve as reminders, and no remaining evidences in connection with the vesicle sufficient to enable a surgeon to mark it as the seat of a preceding inflammation. If, however, the disease is treated without insisting upon absolute and prolonged rest in bed, then the prognosis is bad, most such cases becoming chronic and complicated with an extensive perivesiculitis. A chronic case of this description is liable to yield slowly to treatment, and to be especially rebellious.

Treatment of Subacute and Chronic Seminal Vesiculitis. The treatment advocated for this form of disease consists in an attempt to aid the mechanism of ejaculation, which has been more or less interfered with by reason of the existing pathological processes, and at the same time to eradicate these processes or so to minimize them that they will be no longer capable of exerting an injurious influence on the sexual function. The mechanism of ejaculation has already been studied in considering the physiology of the parts and the manner in which pathological changes, with reference not only to the contents of the vesicle, but also to the walls of the sac and the surrounding tissues, interfere with ejaculation, has likewise received attention. Based upon these physiological and pathological features, and after a careful anatomical investigation, the author has already presented to the profession his treatment of stripping the diseased vesicles by means of the forefinger introduced into the rectum. Two articles—one entitled "Seminal Vesiculitis" (*Journal of Cutaneous and Genito-Urinary Diseases*, New York, September, 1893), and the other "Persistent Urethral Discharges Dependent on Subacute or Chronic Seminal Vesiculitis" (*Journal of Cutaneous and Genito-Urinary Diseases*, New York, June and July, 1894)—have been published by him, in which

this treatment has been carefully and fully considered. The author first began in 1891 to make a systematic trial of the method of treatment which will be shortly described. In the first article, which was prepared and read at the New York Academy of Medicine in the spring of 1893, the treatment was still spoken of as somewhat experimental. In the next, written a year afterward, the results derived from the treatment since the writing of the first article had been so striking and beneficial that it was not felt necessary to, as it were, apologize for the methods employed on the ground that they were experimental. And now, as the result of a riper experience and of a much wider acquaintance with these conditions, the author is prepared to advocate strongly his treatment for subacute and chronic vesiculitis as curative in most instances, if properly employed, and also as being the only method heretofore advanced which has been of any positive value in this connection. The writer does not claim that the idea embodied in the treatment of stripping the vesicles is original with himself. He does, however, claim the credit of putting it to practical account, and of developing therefrom a system and method of treatment which at his own and at the hands of numerous others has proved to be of special merit and value. It was from Dr. E. L. Keyes, and from some experiments undertaken by that gentleman in 1887 and 1888, that the writer derived his ideas in this connection. Dr. Keyes's theory was that certain cases among those classed as spermatorrhœa, especially those in which there was a complaint of seminal losses following straining at stool, might be benefited by systematic pressure applied at regular intervals upon the vesicles by means of some appliance introduced into the rectum, the object

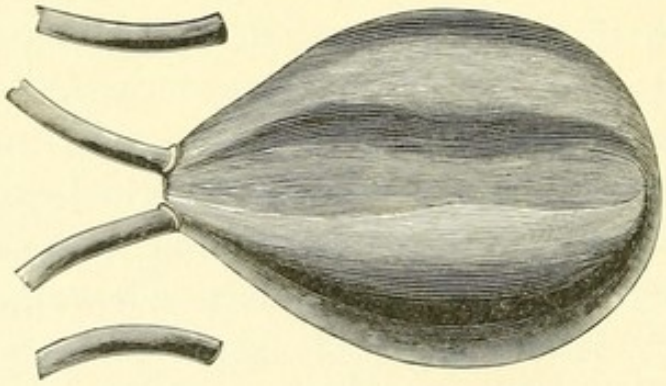
being to restore the muscular tonicity of the vesicles by not allowing them to remain in an overdistended condition. The following mention of these experiments was made by the author in his article already referred to on seminal vesiculitis:

FIG. 20.



Keyes's rubber bag for pressure on the vesicles.

FIG. 21.

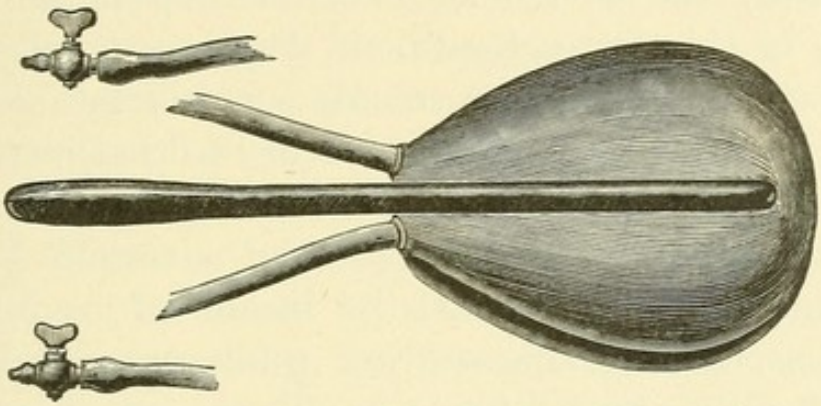


The same instrument when dilated.

"Acting on this idea, Dr. E. L. Keyes, a few years ago, designed and had constructed a rubber colpeurynter containing two lateral air-chambers. The instrument was pushed well into the rectum, and then inflated and drawn firmly forward, the expectation being that the distended air-chambers pressing on the vesicles

would squeeze out their contents along the ejaculatory ducts and into the urethra. Figs. 20 and 21 show patterns of this instrument, both designed by Dr. Keyes. Fig. 22 has a handle, in order that the traction and pressure may be the better regulated.

FIG. 22.



The same instrument with the hard-rubber shaft attachment.

"These instruments accomplished their purpose to a certain extent; they were deficient, however, in that not only their introduction and manipulation were painful and objectionable to the patient, but also and more important the pressure of the air-chambers on the vesicles could not be well regulated or adjusted. They were, therefore, abandoned and the forefinger employed."

Since writing the article just referred to, however, the writer has discovered that Trousseau held ideas on this subject very similar to those advanced by Keyes. This French author, in his work entitled *Clinique Médicale de l'Hôtel-Dieu de Paris*, second edition, vol. ii., Paris, 1865, devotes a chapter to seminal losses. This chapter is of such interest that it has seemed well to make certain quotations from it. Trousseau held that spermatorrhœa could be divided into two classes—(1) where it was dependent on an excess of contractility of the seminal vesicles, and (2) where it was dependent

on an atony of the ejaculatory ducts. For the first class of cases the treatment of Lallemand, which consisted of touching the verumontanum with caustic, was approved of. For the second class, however, Lallemand's method was held to be of no avail, and treatment by means of continuous pressure on the atonic ejaculatory ducts was advised. In speaking of the history of this latter treatment, Trousseau states: "In 1825, while an interne at the Maison de Santé de Charenton, Dr. Bleynie, who was attached to that institution, spoke to me concerning one of his patients suffering from impotence, who, having found a certain Parisian charlatan, had been cured by means of a procedure which necessitated his wearing in his rectum a knob of wood." Ten years after this, Trousseau, bearing in mind the idea derived from Bleynie, put it to a practical test in an aggravated case of sexual derangement. He shaped a piece of wood so that it resembled a speculum, introduced it into the rectum, and maintained it there for fifteen days by means of strappings. Improvement was marked at the end of five days, and at the end of fifteen days a cure was reported. After his first successful case the author endeavored to find the reason for the satisfactory result, and then it was that he advanced his theory of atony and distention of the ejaculatory ducts, to cure which continuous rectal pressure was essential. Acting on this idea, Trousseau invented an apparatus consisting of an ivory or hard-rubber cone attached to a T-bandage, which was in turn secured about the waist. The cone was of such length and shape that on being inserted into the rectum it pressed on the seminal vesicles and prostate. An exact description of this instrument and of its method of appliance is given; but these are details which it is unnecessary

to repeat. With this improved appliance further successes were recorded.

As has been said, the technique of stripping diseased vesicles has been fully described in the author's two articles on the subject, so that in this connection little is necessary further than the incorporation of these descriptions with whatever modifications and changes a greater experience may have suggested.

"To accomplish the treatment, the patient presenting himself with a full bladder should, while standing with his knees straight, bend the body forward at right-angles. Then the operator should introduce the forefinger of one hand well into the rectum, the fist of the other hand exercising firm counter-pressure over the pubes. By these means the end of the forefinger will in all ordinary cases reach well beyond the posterior margin of the prostate. The bodies of the vesicles can thus be detected, one on each side beyond the posterior prostatic border. (Only the lower half of the body of the vesicle can be felt ordinarily by the finger, the rest being beyond reach.) After the forefinger has been so introduced firm pressure should be made by its tip on the body of the vesicle to be treated as far back as it is possible to reach. Then the finger-tip, the pressure being maintained, should be slowly and firmly drawn forward along the line of the vesicle. The manœuvre is aided by the counter-pressure over the pubes with the free hand. This process may be repeated several times in connection with each vesicle. In this manner some of the vesicular contents, provided the sac be diseased and distended, can be pressed out along its ejaculatory duct and into the prostatic sinus.

"As has been stated, the stripping should be done on a full bladder, and after the manipulation the urine

should be voided in order that the surgeon may see how much has been expressed. This treatment should be repeated not oftener than once in four days, and in most cases under active treatment as often as once a week. If it is done too frequently, or too severe pressure with the forefinger is employed, acute symptoms may be stirred up which may leave the patient worse off apparently than before treatment was commenced, besides at times causing an acute epididymitis."

In his first article the author says: "I have had the misfortune to cause such an acute attack in two of my earlier cases from too vigorous and too frequent treatments. One of the cases was too acute in the first place to be suitable for this form of treatment, and in the second case I failed to stop the treatment when acute symptoms began to reappear. The chief signs of a rekindling of acute symptoms are the increased tenderness in the vesicular region which the patient experiences on manipulation, and the appearance of the fluid pressed out of the vesicle, free pus appearing, which renders the whole specimen turbid if the part is threatened by an acute inflammation. Another accident which may occur in very chronic cases if too severe pressure is employed, and probably in some such instances where the appropriate amount is employed, is hemorrhage into the vesicular sac. Such hemorrhage may be severe, causing great distention and much pain. This accident occurred in one of my chronic cases, probably from too severe pressure in trying to squeeze out a mass of very inspissated material. It will thus be seen that this treatment must be used with much care to avoid oftentimes disagreeable accidents. These accidents will probably be sufficiently frequent in the hands of some to cause them to decry vigorously this form of treat-

ment, and to condemn it altogether. In the cases, however, which progress favorably the tenderness of the vesicles gradually disappears, the amount of material squeezed out each time becomes less, and finally *nil*, the vesicles themselves feel less prominent to the touch, and eventually largely escape detection, and the patient is cured. In numerous cases this vesicular pressure is all that is required to effect a cure. In others, however, supplementary treatment may be indicated. If general anemia and lack of nerve-force are associated conditions, then nux vomica, cod-liver oil, iron, etc., may be of great value, together with light outdoor exercise and a generous diet. In all cases where any vesical fermentation coexists, and in some cases where the expulsion force of the bladder seems sluggish, vesical lavage immediately after the squeezing of the vesicles may be of value, the bladder being filled with an antiseptic stimulating substance—a solution of corrosive sublimate, from 1 in 12,000 to 1 in 20,000, often serving the purpose. The patient is then directed to void this solution in the natural manner, thus bathing the deep urethral portion of the canal. Deep urethral injections of stimulating or astringent substances, always in cases which are at all acute, and in most chronic cases, are injurious, aggravating the existing symptoms frequently to a marked degree. Sometimes, however, in the convalescent stage of subacute or chronic cases, where for a considerable period the vesicles have been stripped of their accumulations, and where the muscular tone has been partially re-established, then such deep injections may be used with advantage. In rare instances deep stimulating injections give relief in very chronic cases unassociated with rectal pressure. Sounds in most cases are distinctly injurious. In a few chronic in-

stances, however, they may be of some temporary benefit in allaying symptoms. Sexual intercourse should be prohibited while these cases are under active treatment. When convalescence is fully established, coitus once or perhaps twice a week sometimes seems to exercise a favorable influence by stimulating the contractile power of the vesicle. It should always be moderate, however; and, if it taxes the strength of the vesicle too much, it should be speedily abandoned."

The author still adheres in the main to these ideas quoted from his first paper. As a supplementary treatment in the convalescent stage, however, he is at present more adverse to employing deep urethral injections than formerly, preference now being given to vesical lavage, administered in the manner described; and in those cases where corrosive sublimate solutions do not apparently produce sufficient stimulation, nitrate of silver solutions in the strength of from 1 to 3 grains to the pint of water are recommended. He also employs cod-liver oil more extensively than heretofore, it having been found especially efficacious in hastening the absorption of chronic indurations in those cases where such improvement is slow, although there be no suspicion of a tubercular tendency. Also, as regards sexual intercourse in convalescence, something further can be said. If such is to be allowed, the patient should be directed to report for examination after the accomplishment of the act. If, then, an examination shows the vesicles to be firm, and if little or nothing can be stripped from them, in all probability coitus will be productive of good. If, on the other hand, however, an examination shows the sacs to be distended and tender, and if considerable material can be stripped from them, then coitus will be productive of harm, and

should be prohibited until convalescence be further established.

In his second article the author makes the following remarks on treatment, which are in a measure supplementary to the remarks in the first article:

"During the active stage of treatment patients should be seen once in every five to seven days. The active stage of treatment lasts all the way from a month to six weeks, in the most favorable cases to eight or nine months, and possibly longer in severe and chronic ones. During the active stage of treatment, in some cases where there is a tendency to an inflammatory reaction, it may be beneficial to suspend treatment for a month or six weeks.

"After resolution in the vesicles has been sufficiently established—*i.e.*, after the muscular tonus has been restored—it is still well, as a precautionary measure, to examine these organs at least once a month for a period of from four to six months in order to make certain that they do not tend to relapse into their former state, thus rendering a return of the discharge possible. The peculiar mode of treatment adopted in these cases, which consists of stripping the diseased vesicles of their contents by means of the forefinger in the rectum, has been fully described in my article on seminal vesiculitis, reference to which has already been made.

"As, however, some confusion seems still to exist in the professional mind regarding this point, it has seemed well at the present time to make further remarks on this subject. In the first place, there has been a tendency to confound this treatment with that of the so-called 'prostatic massage,' which form of treatment has been advocated off and on for a number of years, in a rather random manner, by a few Continental writers,

chiefly Russian, for certain vague prostatic conditions, mainly neuralgias, such as may persist after the subsidence of inflammatory conditions, and in old men to reduce chronic prostatic hypertrophy, the object being to improve the circulation in the parts with the hope of promoting absorption. In a good percentage of cases where I have delegated this stripping of the vesicles to others, and in which, after an apparently sufficient interval, no improvement took place, I found that the attending surgeon had not grasped the idea of stripping the vesicles, but had simply massaged the prostatic region. By so doing little or none of the inflammatory vesicular material was pressed out, but rather churned up, as it were. Consequently the vesicular contents, instead of being reduced, were more apt to be increased by reason of the disturbance produced, and thus oftentimes the condition of the patient was aggravated rather than relieved.

"In a number of these cases, with the consent of the attending surgeon, I subsequently undertook the treatment, with the result of speedily relieving the symptoms. In all such cases the patients remarked that my manipulations produced sensations entirely different from those they had previously experienced during their former treatment.

"Then, again, a number of surgeons have declared to me that such treatment could be successfully executed only by those who happened to have a long forefinger, and consequently an extensive reach. This is the same argument which one hears so often advanced against the short-armed man in the boxing-match. Still, if the short-armed man has only the requisite skill, it is seen that he has no difficulty in reaching all the vulnerable parts of his long-armed antagonist. I take it that the

forefinger of most adults is long enough. In fact, the real obstacle to success does not lie in the length of the forefinger, but in the ability of the operator to overcome the natural resistance of the perineal muscles. When a case is first treated this muscular resistance is liable to be very marked. As, however, the patient becomes by degrees accustomed to the manipulations, and as the vesicular tenderness decreases, this element of muscular resistance diminishes. On this account it is always well with a new case to be as gentle as possible in executing treatment, otherwise what is simply a disagreeable sensation may be looked upon as an ordeal.

"If a patient continues in this latter mental state, the muscular tension is always intensified and manipulations may be very difficult. To overcome this muscular resistance, firm pressure with the closed fist, minus the extended forefinger, against the perineum is necessary. In some thick-set, rigid individuals the perineal pressure required may be very considerable, since in such instances counter-pressure on the hypogastrium with the other hand accomplishes but little.

"In such cases the muscular effort required to enable the forefinger to perform the necessary stripping may be greater than an operator who is not physically fairly robust can command. As an aid in making perineal pressure where much resistance is encountered, I have found that the knee corresponding to the arm used in manipulating can be made to play an important auxiliary *rôle* in pushing against the elbow. In order to carry out this manœuvre a chair is drawn up behind the patient as he stands with his body bent forward, in what I have been accustomed to term the 'leap-frog' position, and ready for the treatment. Then the foot of the operator corresponding to the hand to be aided is

placed in the chair, thus bringing the knee up to the level of the elbow. By this arrangement the muscles of the thigh and leg, as well as of the arm and shoulder, all working together, can furnish pressure sufficient to overcome the resistance of the most rigid perineum. It is only occasionally that such extensive muscular efforts are called for. In weakly, loose-fibred individuals little or no perineal pressure is required to reach the vesicles, or even, if need be, much further. In fact, in such cases with a little counter-abdominal pressure one can easily engage the tip of the forefinger in the sigmoid flexure."

The author, as is seen, recommends that the patient presenting himself for treatment shall have a full bladder. This is for two reasons. In the first place, when the bladder is full the rectal finger can more easily reach the vesicles; and in the second place, by having urine in the bladder, which can be passed after the treatment, the surgeon by inspecting it each time is able to compare the varying amounts and qualities of the expressed fluids. The point has also been emphasized, that the manipulations should not be too severe, nor the pressure exerted by the finger too great, in the early stages of treatment. After, however, all tenderness has disappeared, then in many cases heavy pressure on the vesicles can be well borne and is productive of much good.

The stripping process is productive of good results not only by reason of its expressing pathological material from the cavity of the vesicle, but also by stimulating, in connection with the vesical walls and surrounding tissues, a reabsorption of inflammatory congestions and exudations. In this latter respect it acts in a manner similar to a sound on a granular infiltrated

urethra. Each stripping stirs up a fresh engorgement of the chronically inflamed organ, and after the subsidence of each of these temporary engorgements the parts are found to be somewhat more elastic, pliable, and natural than before it. No stripping should ever be repeated until the engorgement effects of the preceding treatment have disappeared, and this ordinarily takes, as has been stated, from four days to a week.

In all of these cases during the early stages of treatment, and in some of them throughout the period of active treatment, the testicles should be so supported by a well-fitting suspensory bandage that all tension is removed from the spermatic cords.

For the successful treatment of seminal vesiculitis the forefinger of the genito-urinary surgeon requires as much education in the rectal feel as does that of a gynæcologist in the vaginal feel, in order not only to appreciate variations or differences in regard to diseased conditions, but also to make sure of detecting existing disease. A short time since the author attempted to demonstrate to a practitioner unaccustomed to the rectal feel an extremely well-marked case of chronic vesicular disease. The gentleman, however, declared that he could appreciate nothing by his feel; and, as numerous practitioners rarely make a digital rectal exploration, it is probable that such an experience under similar conditions may not be of rare occurrence with many. As an evidence of the difficulty that some experience in attempting this treatment of stripping the vesicles are the remarks made regarding it by R. W. Taylor, of New York, in an unpublished paper read at the Annual Meeting of the American Association of Genito-Urinary Surgeons at Washington, D. C., May 31, 1894. Taylor apparently found it no easy matter in many cases to

reach the vesicles with his finger, and also to determine thereby the existing state of affairs. With sufficient practice, however, careful attention being paid to the technique herein described, the author sees no reason why most surgeons should no be able successfully to accomplish the treatment. Taylor also, in his paper just referred to, was inclined to think the treatment herein advocated of stripping the vesicles an impossible process owing to the interior structure of these organs, they being, according to him, made up of blind-ended tubes, extending in all sorts of directions. From this hypothesis Taylor argued that the pressure exerted by the tip of the forefinger from above downward along the general course of the vesicle, since it did not correspond with the tortuous directions represented by the blind-ended tubes, could not force out the contents of the vesicle. The fact that there is, as seen in Fig. 7, a main pyriform-shaped cavity to the vesicle, which extends down to and is continuous with the ejaculatory duct, the directions of both corresponding exactly with the direction of the outside contour of the vesicle, evidently escaped that gentleman's notice. His argument, therefore, was founded on a false assumption.

In the chapter on Anatomy the author has mentioned the fact that if one on endeavoring to explore the interior of a vesicle first of all opens the diverging canals at the top of the organ instead of slitting up the cavity from below—from the region of the ejaculatory duct—much confusion will result regarding the contour of the interior cavity; and this is probably why Taylor thought that for anatomical reasons stripping a vesicle was impossible. As far as stripping out the contents of the diverging canals, which communicate with the main cavity of the vesicle, by the process herein advocated

is concerned, Taylor's argument may be to some extent correct. It is not claimed, however, that the finger-tip can reach to the very top of the vesicle, except in occasional instances, as would be required in order to strip the canals. In fact, the question of whether or not these structures can be stripped does not bear in the least on the treatment of stripping the vesicle as advocated in this work, since this treatment has reference only to the main cavity of the vesicle.

On the erroneous idea also that the ampulla of Henle (the enlarged cavity of the vas deferens) is directly connected with and continuous with the corresponding ejaculatory duct, when in reality it connects with the cavity of the vesicle by a sphincter or valve-like opening, some investigators have thought that much of the material forced out of the ejaculatory ducts by the stripping process came directly from the ampullæ, and that these cavities rather than those of the vesicles were the important features in this treatment.

In this connection some clinical investigations by Posner, of Berlin (*Verhandl. d. Kongresses f. innere Medizin*, Wiesbaden, 1889), on the diagnosis and treatment of chronic prostatitis are worthy of notice. M. Krotoszyner, a student of Posner's (*Int. Cntrl. für d. Phys. u. Path. d. Harn. u. Sex.-Org.*, 1893, p. 363, and *Journal of the American Medical Association*, Chicago, July 31, 1894), also appears in two articles based on Posner's ideas as set forth in his original paper. These papers have but very recently come to the attention of the writer. Posner holds that certain cases of posterior urethritis are really dependent on a chronic prostatitis, which in many, if not most, instances involves the ejaculatory ducts. In order to determine this condition the so-called "expression test" is advocated. This test

is as follows: The patient starting with a full bladder urinates a part of the vesical contents into two glasses as usual, but reserves a portion of urine still in the bladder. The finger is then introduced into the rectum and made to exert firm pressure against the prostate. The third portion of urine is after this passed. If chronic prostatitis so-called exists, then the evidence of this condition will be found in the last portion of urine, which will be seen on comparison with the middle specimen to be milky or cloudy, and oftentimes to contain shreds in greater number than appear in the other two specimens. It is also noted that spermatozoa are, as a rule, found in these expressed specimens, which indicate the existence of a chronic prostatitis. Many of these cases are cured, according to Posner, by repetitions of this digital prostatic expression.

It seems to the writer probable that these cases, classed by Posner as chronic prostatitis, are really cases of seminal vesiculitis, since the expressed fluid is said to contain, as a rule, spermatozoa, and since, as is stated, the ejaculatory ducts are in almost all instances involved in the inflammation. It further seems probable that "the digital expression of the prostate" is curative only in so far as it happens to free the ejaculatory ducts from inflammatory material.

Koltz, of New York ("Endoscopic Studies," *New York Medical Journal*, January 26, 1895), has made the attempt in one instance to treat a purulent gonorrhœal seminal vesiculitis by injections of a few drops of a $2\frac{1}{2}$ per cent. solution of nitrate of silver into the urethral opening of the ejaculatory duct, a specially constructed Pravaz's syringe with a long canula being used. An endoscopic tube was first introduced and the mouth of the ejaculatory duct located by means of

the pus which constantly exuded from it. Then the nozzle of the syringe was introduced through the endoscopic tube and its end, after considerable difficulty, engaged in the opening of the duct. Several such injections were made at intervals, and the urethral symptoms, which were a feature in this case, improved. A severe grade of epididymitis, however, was apparently induced thereby, and the treatment had to be suspended. Such treatment, in like manner as strong deep urethral injections of nitrate of silver under similar conditions, will, in the author's opinion, prove itself injurious rather than beneficial in curing seminal vesiculitis, though it may temporarily subdue attendant urethral symptoms.

The prognosis of subacute and chronic seminal vesiculitis is in most cases good, at least as far as regards curing the subjective symptoms. Some cases are, however, very slow in showing marked improvement; and should the individual so affected be of an impatient disposition, he will probably abandon systematic treatment before the favorable effects show themselves. Instances where there is marked perivesicular induration or extensive inflammatory infiltration into the walls of the sac are liable to belong to this slow class. Chronic vesiculitis in elderly men, associated with senile hypertrophy of the prostate, is probably little benefited by treatment. The age of the patient is a very important element in the prognosis. What are apparently the severest grades of disease generally yield satisfactorily to treatment in those under thirty years of age. The results also in those between thirty and forty years old, although slower than in those more youthful, especially if the disease is of very long standing, are still, as a rule, favorable. With patients over forty years old,

however, a guarded prognosis should always be given. Disease in those of a good physique yields quicker than in those who are generally feeble and frail. Seminal vesiculitis, associated with suppuration in connection with the interior of the vesicle, is slower in getting well than the non-suppurative forms.

Treatment of Tubercular Seminal Vesiculitis. Rarely, as has been mentioned, the tubercular process in this connection may take an acute form. In such instances the treatment during such a stage should be much the same as that advocated for the simple acute inflammation, except that considerable alcoholic stimulation would be of benefit, as would also cod-liver oil in some easily assimilated form, provided, of course, the stomach can tolerate the drug. Acute tubercular trouble in this connection, unless it extends and involves the bladder and testicle, gradually becomes chronic. Tubercular inflammation of the vesicles, however, is generally subacute or chronic.

In the management of these subacute and chronic tubercular conditions of the vesicles the main point lies in promptly distinguishing them from the corresponding non-tubercular inflammations. For if one starts in vigorously to strip vesicles so affected a marked inflammatory reaction is liable to result, which leaves the patient worse off than before resorting to treatment. In this connection it may be well to quote the following passages from the author's second published article on this subject (*Journal of Cutaneous and Genito-Urinary Diseases*, June and July, 1894):

"I wish also to impress on the professional mind the frequency of tubercular inflammation of the vesicles, and to warn all in these cases to exercise the greatest care in attempting digital rectal treatment, lest the con-

dition of the patient be aggravated rather than palliated. The practised finger will soon learn to detect this condition, either at the first examination or very shortly after commencing a course of strippings, as the result of the inflammatory reaction produced by the manipulations."

And also: "In this form of inflammation the parts resent the manipulations, unless, indeed, they be most gentle; and even then it is a question if this form of treatment is beneficial. If the tubercular condition is not diagnosed at first, the manner in which the vesicles when so involved resent the ordinary manipulations by becoming more tender and indurated, thus aggravating the urethral symptoms, speedily renders the correct diagnosis apparent."

The most efficacious means of treating these cases consists in measures of a general character intended to combat the tubercular diathesis, such as climatic influences, hygiene, generous diet, etc. Cod-liver oil, if it can be tolerated, will prove of great value. If vesical or urethral inflammatory symptoms coexist, as is frequently the case, no local methods of treatment should be directed toward them, at least in the early part of the treatment. Such conditions are generally best treated by ordering the individual to drink freely of some diuretic spring water. Occasionally, where a painful cystitis coexists, an anodyne may be necessary. The finger should not be introduced into the rectum during the early treatment, except for diagnostic purposes and to watch the progress of the disease. If the patient can be gotten into a fine physical condition as the result of general methods of treatment, then, in most instances, the vesiculitis disappears along with the advent of the general improvement. If, however, the effects

of the vesiculitis persist in spite of the general improvement, as may be the case especially where the inflammation has to a considerable extent impaired the muscular tone of the sacs, then gentle and judicious strippings may be of great benefit, and may serve to complete the cure. If likewise a little vesical inflammation or a urethral discharge also persists, then some mild local measures may be tried; but not, however, until it is seen that the gentle strippings fail to cure the urinary symptoms. Where local urinary treatment is called for under these circumstances, vesical lavage of corrosive sublimate solutions, in the strength of from one-fifth to one-third of a grain in ten ounces of hot water, is recommended, given once in three or four days. A soft catheter is passed and as much of the fluid as can be comfortably contained is injected. Then the catheter is withdrawn and the injected fluid urinated in the natural manner. In this way the whole tract is medicated. Nitrate of silver solutions are too stimulating for these cases. If, however, the patient does not yield to general measures of treatment, owing apparently to the disease in his vesicles, and if the disease is confined largely, at least, to one or both of these organs, then extirpation of one or both of them, as the case may be, is a procedure which is not only proper, but may be demanded.

Operative Procedures. The operative procedures which have been performed in connection with the vesicles are, (1) aspiration, (2) incision and drainage, and (3) extirpation.

Aspiration. Jordan Lloyd, of Birmingham (*British Medical Journal*, April 20, 1889, and London *Lancet*, October 31, 1891), has aspirated vesicles when the seat of suppuration, and advocates this procedure.

The needle is made to enter the cavity of the distended sac through the perineal tissue, a finger in the rectum acting as a guide to it as it is pushed through the perineum. Cases, however, which get well from such a simple operation must be those in which the suppurative process is wholly confined to the cavity of the sac, the perivesicular tissues remaining undisturbed. Cases of this variety when acute generally, as has been seen, recover completely as the result of non-operative methods of treatment, a very small proportion only of them becoming chronic. The subacute and chronic cases of this variety yield to the stripping treatment. It therefore seems to the author that aspiration is a form of treatment which can be abandoned.

Incision and Drainage. Lloyd also, in the two articles just referred to, besides aspiration advocates perineal incision into the vesicle (the technique of which is much the same as that of aspiration), in purulent conditions, and the establishment of drainage. Since then a number of others have adopted this method. Where, however, an operator desires to lay open the cavity of the vesicle, and not merely to incise it, a more formidable operation, associated with considerable dissection, is necessary. The various dissections which may be employed under these circumstances will be considered under the heading of excision. Reich (*Journal des Praticiens*, May 23, 1894) reports a case of this description in which Von Dittel operated. The Von Dittel incision was made and the rectum was displaced to the right. It was found necessary also to resect the coccyx. The sac was then opened and tamponed with iodoform-gauze.

With the introduction of the stripping treatment in subacute and chronic simple inflammations, and of the

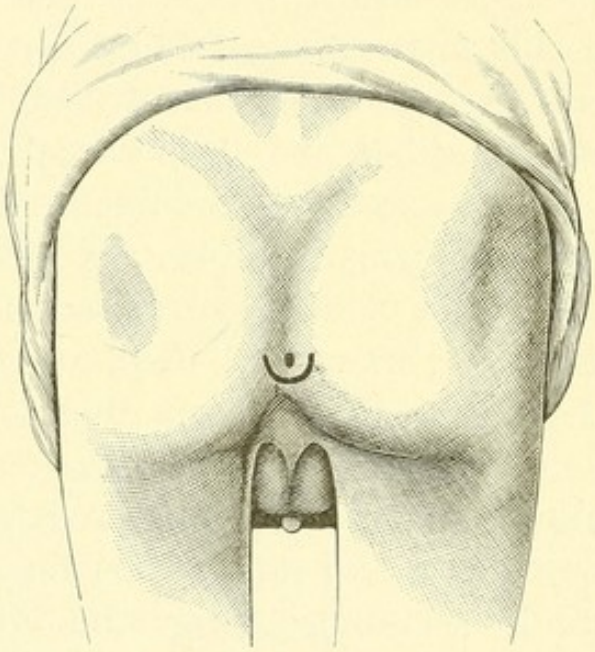
treatment herein advocated for acute ones, the necessity for incising the seminal vesicles will be very much lessened. In very acute conditions, however, complicated with perivesicular suppuration, treatment more vigorous than that usually employed would be demanded; and, under such conditions, free incision and drainage would be called for, in which case the author is of the opinion that one of the special dissections, such as are employed in extirpation, would be far better than simply plunging a long-bladed knife through the perineum to the seat of the disease, as Lloyd advocates. In most of these cases the author would recommend the procedure of Zuckerkandl, although in some instances, where the suppuration outside the sac seems to be very extensive, one of the procedures consisting of a still freer incision might be more advisable. Likewise in some cases of chronic purulent seminal vesiculitis complicated with purulent perivesiculitis, a free incision into and, probably better still, through the sac, in order the more perfectly to drain the surrounding tissues, might be called for, although in such extreme instances complete extirpation of the sac would probably be better surgery. Tubercular vesicles not amenable to the conservative methods herein advocated for these cases might be treated by incision and drainage; but, as has been found in the surgery of tubercular kidneys, it is here likewise probable that total extirpation is the better general method of treatment, provided, of course, that by so doing the principal or most distressing focus of disease may be eliminated. Another indication, rare to be sure, demanding free incision into the cavity of the vesicle is calculi too large to be stripped out along the ejaculatory ducts. The author's case of this nature, which will be related in the last chapter,

would have required this operation had the concretion been any larger. Polypoid growths also serving to obstruct the outlet of the vesicle could be removed in this manner. A case of this description has, however, not as yet been recorded.

Extirpation. It is to Kraske that much credit is due in connection with many of the operations which have later been undertaken with the object of extirpating the vesicles. To be sure, Kraske planned his procedure with the idea of removing cancer involving the upper portion of the rectum. Still, it was the possibilities presented by his plan of procedure that led many surgeons to study it as a means of attacking disease in connection with other and deeper seated organs of the pelvis. It also acted as an impetus in attracting surgical attention to this locality. Kraske published his procedure in 1885 ("Zur Exstirpation hochsitzender Mastdarm Krebse," *Verhandl. d. Deutsch Geschellsch. f. Chir. Berl.*, 1885, xiv., part ii., pp. 464–474). It consisted of a cut beginning near the posterior superior spine of the ilium, on the left side for operations on the rectum (on the right for operations on other pelvic structures), and extending along the border of the sacrum. At the region of the coccyx it turned in somewhat. The cut did not extend much beyond the coccyx. The enucleation of the coccyx and the resection of the corresponding sacral wing up to the third foramen were included in the operation. This procedure was shortly after its introduction utilized by gynæcologists for extirpation under certain conditions of the uterus. In 1889, O. Zuckerkandl ("Ueber die perineale Blosslegung der Prostata und der hinteren Blasenwand," *Wien. med. Presse*, 1889, xxx. 857–902), as a result of his anatomical investigations, proposed the

following procedure, intended to expose the prostate, seminal vesicles, and base of the bladder for operative purposes: A concave incision is made across the perineum from one tuber ischii to the other, the concavity looking toward the rectum. (Fig. 23.) The perineal muscles are then cut through, the portions of the levator ani arising from the pubes divided, and the rectum drawn backward. Fig. 1 in the chapter on Anatomy

FIG. 23.



Zuckerkandl's incision.

represents the deeper steps in this dissection perfectly, so no further explanation of it is here necessary. As seen, however, in Fig. 1, the space that this dissection allows for operative manipulation in connection with the seminal vesicles is very small. The best that it affords is a limited exposure of the lower portion of the vesicle, through which the organ has to be drawn in case of extirpation, which procedure might be attended with much difficulty, and would perhaps be impossible, if

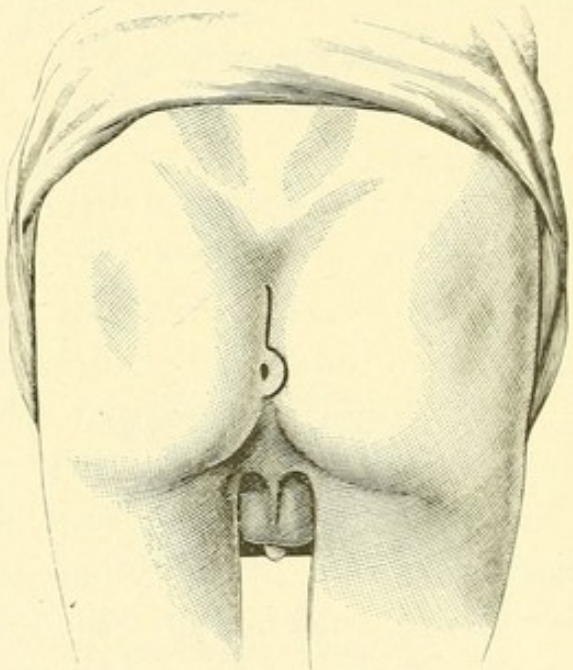
firm perivesicular adhesions existed, such, for instance, as are represented in Plates VII. and VIII. If the organ to be attacked, however, is not especially adherent, this procedure is of value and perfectly feasible, as shown by the number of successful extirpations which have been accomplished by means of its employment.

In 1890, E. Ullmann (*Centralblatt f. Chir.*, Leipzig, February 22, 1890), adopting the theoretical procedure advocated by Zuckerkandl, was the first one to extirpate the seminal vesicles. He successfully removed both these organs, which were tubercular, from a seventeen year old boy. The patient got well, but a perineal fistula persisted, which, however, did not give passage to urine.

In the same year, 1890, Von Dittel (*Wiener klin. Wochenschrift*, May 1 and 8, 1890) devised and published his method of lateral or bilateral prostatectomy, which method he asserted could also be appropriately used for the extirpation of seminal vesicles. The method is as follows: A catheter is tied in so that the urethra may be easily appreciated and shielded from injury in operating. For like reasons the rectum is stuffed out with gauze, the ends of which are left hanging out so that the whole can be easily removed. The patient is placed lying on his belly, with his legs hanging down. A cut is then made extending from the tip of the coccyx down in the middle line almost to the rectum. It then deviates to the right or left, as the case may be, just avoiding the rectum, making a half-moon-shaped curve around that opening, and terminating in the middle of the perineum. In completing the dissection the rectum is pushed upward and to one side. If more room is needed, the coccyx can be removed and the lower end of the incision, instead of terminating in

the middle of the perineum, can be continued laterally and upward to the tuber ischii, thus combining the Zuckerkandl incision with that of Von Dittel. Such a combination has been called the Zuckerkandl-Von Dittel procedure for extirpating the seminal vesicles. It affords much more space for operative manipulation than the exclusive employment of either of these methods, and is consequently of much value. Fig. 24 represents Von Dittel's incision.

FIG. 24.



Von Dittel's incision.

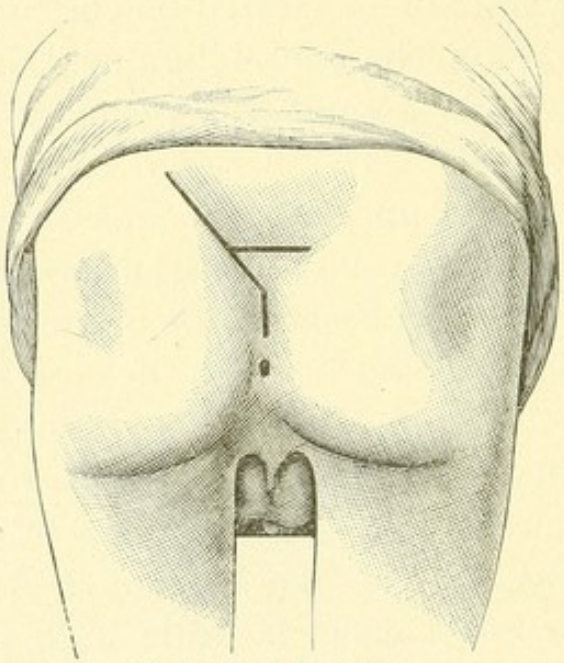
In 1891, Roux (*La Semaine Médicale*, Paris, April 8, 1891) reported the removal on two occasions of tubercular seminal vesicles. As the method he adopts is practically the same as that of Zuckerkandl, it is not necessary to describe it further. He makes, however, the following suggestion in regard to the technique, which seems to be clever: After a vesicle has been exposed a finger is introduced into the rectum and utilized to press the organ down into the wound, where

it can be more easily grasped and drawn forward preparatory to being excised.

In the same year also Villeneuve (*La Semaine Médicale*, Paris, September 23, 1891) reported the removal of a seminal vesicle through the inguinal canal by the following method: He opens first the tunica vaginalis and works his way upward, following the cord to the inguinal canal, the tissues surrounding it being freely incised. Then the inguinal canal is laid open down to, and if necessary even through, the internal ring. This accomplished, traction is exerted on the cord in a manner similar to that on the round ligament in Alexander's operation. In this manner the vesicle is brought into view and excised. The serious objections to this method, namely, its uncertainty, since in most instances requiring extirpation traction on the cord does not bring the vesicle into view (because the organ is bound down firmly by adhesions, and because the cord being likewise inflamed, and consequently brittle, breaks easily), and also the liability to hernia which it occasions, have been sufficient to prevent its adoption by others, although Büngner (*Deutsche med. Wochenschrift*, April 19, 1894), in striving to effect what he calls high castration, advocates stripping up the cord as far as possible, and then exerting slow traction on the portion remaining still unexposed until it breaks somewhere along the higher part. The author in his article on "Seminal Vesiculitis" (*Journal of Cutaneous and Genito-Urinary Diseases*, New York, September, 1893), in making mention of Villeneuve's method, states: "I tried this procedure it one case; the cord, however, was brittle, probably from tubercular infiltration, and broke on being subjected to moderate tension long before the vesicle had been brought into view."

In 1893, Rydygier ("Eine neue Methode der temporären Resektion des Kreuzsteissbeines behufs Freilegung der Beckenorgane," *Centralbl. f. Chir.*, Leipzig, 1893, xx. 1–5) presented the following modification of Kraske's method: He commences his incision just behind the posterior superior spine of the ileum, and extends it obliquely downward along the border of the sacrum, always keeping, however, about half an inch

FIG. 25.



Rydygier's incision.

from the border of that bone, so that its margin may be well covered by skin even after the retraction of the edge of the wound occurs. The lower portion of the cut is carried downward in the middle line from the tip of the coccyx toward the rectum as far as may be deemed necessary. A transverse cut is then made inward across the sacrum just below the third sacral foramen, which is about two inches from the junction of the sacrum and the coccyx. The sacrum is exposed

by this transverse cut and divided with chisel and hammer. The lower large triangular flap is then raised without difficulty and bent back, thus affording much exposure of the pelvic contents. After the completion of the operation the flap of bone and skin is replaced. (Fig. 25.) Rydygier, in presenting this operation, simply had extirpation of the upper portion of the rectum in view, and consequently advocates that the cut be made on the left side. He asserts that there is no necessity of suturing together the fragments of the sacrum, and that necrosis is not liable to occur; also that no important nerves need be divided in the operation. The wound is packed with iodoform-gauze and left open in its lower portion. Schede (*Deutsche med. Wochenschrift*, Leipzig, February 15, 1894) reports having extirpated the seminal vesicle successfully on two occasions, the method employed being that advocated by Rydygier. Schede prefers this method to that of Von Dittel on the ground that it is easier to perform, that it affords the operator greater space, and that there is no trouble from a bulging of the rectum into the field of operation. The same author (*Deutsche med. Wochenschrift*, June 28, 1894), in another communication on this subject, in which he further recommends the employment of the method of Rydygier for extirpation of the seminal vesicle, mentions that Sick has successfully performed this operation by combining the transverse sacral cut, such as Rydygier has advocated, with Von Dittel's method. Weir (*New York Medical Record*, August 11, 1894) reports the removal of both seminal vesicles successfully, the method of Zuckerkandl being employed.

Just what operative procedure out of all those considered, exclusive of Villeneuve's, is the best, it is

impossible to say. Each one has its favorable and unfavorable features; and it is probable that the best surgeon will not confine himself strictly to any one of them, but will adapt the exact method to be employed in each case to the clinical features of the disease to be attacked and to the physical development of the patient. Thus, if the patient be very fat and thick-set, and if the vesicle to be attacked be bound down by firm adhesions, then the method of Rydygier, or some feature of it, combined perhaps more or less with Von Dittel's, would seem advisable. If, on the other hand, the patient be thin, and if the vesicles be at all movable, then Zuckerkandl's, Von Dittel's, or a combination of the two methods might be best. One strong point in favor of the Zuckerkandl method is that it exposes to an equal degree both vesicles—a feature which does not pertain to any of the others. If, therefore, double extirpation is required, this cut would probably be called for, combined perhaps with that of Von Dittel, and, if necessary, also with that, more or less complete, of Rydygier (or Kraske). One would hardly advocate a double Rydygier or a double Von Dittel operation in case it was desirable to remove both vesicles.

Most, if not all, the reported extirpations were undertaken for the removal of localized tubercular disease. The author, as has been stated, much prefers, as a rule, conservative methods in regard to cases of this nature, and would advocate extirpation only in instances where the hygienic and tonic methods have failed or bid fair to fail. If malignant disease can be detected while still confined to this part, extirpation would, of course, be called for, in which case Rydygier's method would be advised as probably giving the best opportunity for careful investigation and thorough extirpation. Puru-

lent perivesiculitis and disorganized conditions of the vesicle, such as might result from such inflammations, or from calculi, from benign growths and from traumatisms, might also be causes sufficient to demand extirpation of the vesicle.

CHAPTER VII.

ILLUSTRATIVE INSTANCES.

To the casual reader the present chapter, consisting, as it does, of the recital in considerable detail of numerous cases illustrating facts mentioned in the body of the book, may seem unnecessarily prolonged, and consequently somewhat prosy; but to the practitioner interested in the subject it is not thought that it will be found faulty in this respect.

Owing to the newness of the subject, and to the consequent absence in medical literature of such clinical reports, the author has considered it necessary to put these cases on record, in order not only to show in a clinical way their frequency and the value of the study represented in this work, but also to aid those wishing thoroughly to master the subject.

CASE I. Acute Gonorrhœal Seminal Vesiculitis. A typical case. A young man, aged twenty-three years, contracted his first gonorrhœa about a month before reporting for treatment. The attack had been light, and had been treated chiefly by means of anterior astringent injections. When he first presented himself he had posterior urethritis, accompanied by painful micturition every few hours day and night. A few light deep urethral applications were given and the case improved. Shortly afterward, apparently as a result of active exercise, he was attacked by a sudden pain in the left suprapubic

region, radiating down into the testicle and upward toward the hypogastrium. There was also marked tenderness in the left hypogastric region. This attack of pain was associated with a chill and a considerable rise of temperature. Rectal examination showed great tenderness over the left vesicle. In a few days the vesicle swelled very much, and the swelling and œdema quickly extended into the surrounding tissues, so that the finger in the rectum encountered a mass in the region of the left vesicle the size almost of a goose's egg. This inflamed mass extended down to and seemed to be blended with the prostate, which was also inflamed and swollen. The mass was so tender that the gentlest manipulation caused great pain. Urination, although now not so urgent as formerly, was very painful and was rather difficult, the stream being fine and ejected spasmodically. The left spermatic cord also became inflamed and swollen. The epidermis, however, was never affected. The patient was in bed almost four weeks. Continuous fever lasted over two weeks. He was not allowed out of bed till all the tenderness and most of the swelling in connection with the vesicle had disappeared. During the fever the urine was perfectly clear and there was no discharge. When convalescence commenced the urine became loaded with pus, a profuse discharge appeared, urination became less and less painful, and the size of the stream larger. The treatment employed was that recommended for this condition. The recovery was complete.

CASE II. **Acute Gonorrhœal Seminal Vesiculitis High fever and chills. Few symptoms pointing toward the vesicle at first.** A young man, aged thirty years, first called the writer in on the occasion of a severe chill. He was

at the time suffering from his second attack of gonorrhœa, which he had already had about six weeks. Shortly before this he had thought himself almost well; but, as the result apparently of sexual excitement, his urethral discharge had returned, associated with urgent urination and severe pain in the perineal region on erection. In the urine there were large purulent clumps from the deep urethra and considerable free pus. The rectal feel showed the prostate to be rigidly contracted, though but little swollen. The vesicular region was tender, especially on the right side, but not tumefied. The patient was kept in bed for two days, a light anodyne given, together with diuretics and balsamics. On the day after leaving his bed, while jumping off a swiftly moving horse-car, he felt a sudden severe pain in his perineum, and shortly afterward he experienced a severe chill. He went to bed again, and on the next day all the evidences of an acute inflammation of the right seminal vesicle appeared. There was great pain in the right hypogastric region, and the tenderness was so marked that the slightest touch could not be tolerated. Urination became painful and frequent. For several days the fever ranged between 102° and 104°. At the very first of this second attack painful erections were present, but as the fever became pronounced they disappeared. There were shooting pains into the testicle, and after several days that organ swelled moderately. The urine as the fever rose became perfectly clear, with here and there a linear shred. At the end of ten days pus began to appear in the urine, and the acute symptoms and fever began to decrease in a marked degree. At the end of two and a half weeks the urine was loaded with pus and the swelling of the vesicle had begun to decrease rapidly. It was five full weeks before

the vesiculitis had subsided so that the patient could with safety leave his bed. At that time, however, all his symptoms had disappeared, his urine was clear, and he has remained perfectly well ever since. The treatment such as has been recommended for acute conditions was prescribed in this case. In this case it is probable that the first chill was premonitory of the threatened acute attack; and had this case been kept in bed longer at first he probably would have avoided his subsequent trouble.

CASE III. **Acute Seminal Vesiculitis in a Tubercular Subject. An instance where a subacute tubercular condition of the vesicle was rendered acute by gonorrhœal infection.** The case in question, aged forty-three years, had been tubercular from childhood. He had anchylosis of one hip-joint, and the scarred remains of numerous sinuses connecting with the joint. He had also had minor tubercular outbreaks in connection with other parts. He had had gonorrhœa twice in early life. For the last few years he had been troubled with sexual cravings, and had consequently indulged freely, without, however, being able to get marked satisfaction. When first seen a fresh gonorrhœal contagion was just beginning to manifest itself—the meatus being puffy, sore, and glued with a straw-colored discharge. Gonococci were found. Although the gonorrhœal infection was confined at this stage to the region of the meatus, still it was thought well to note the condition at this time of the seminal vesicles, owing to the symptoms of sexual craving which pointed in that direction. Both vesicles were found somewhat thickened and indurated, although not tender. The gonorrhœal infection progressed rapidly, and the urethral symptoms caused by it were severe. His uri-

nation at the end of ten days became very frequent and urgent, and much pain was complained of at defecation. Rectal digital exploration now showed both vesicles, especially the right, to be very tumefied and tender, although the tenderness was not so marked as in Cases I. and II. Slight pressure on the right side caused a free purulent flow from the meatus, and in this flow there were streaks of blood and numerous spermatozoa. Fever was present, but was not a marked feature as in Cases I. and II. Hypogastric tenderness also was not so marked. The right epididymis in a few days became involved and an acute hydrocele appeared, which soon became purulent, necessitating an incision. The patient was kept in bed for about four weeks. By the time, however, resolution had taken place in the epididymis and the tunica vaginalis, the urine had cleared up and the urinary act become natural. Examination of the vesicles showed them to be again in apparently the same condition as at the first examination. Since convalescence the patient has reported that he is all right.

The author was rather suprised with the termination of this case, especially with the quick resolution, as he had thought the acute vesiculitis might lead in such an instance to a chronic and extensive suppurative process.

CASE IV. Subacute Seminal Vesiculitis brought on by Mental Strain and Overwork. Frequent urination associated with a burning sensation. Severe pains over the pubes. Frequent erections. Difficulty in starting his stream at times. The patient, aged thirty-five years, had for a number of years been overworked, and had devoted but a few hours each night to sleep. He was married, and, although frequently his erections were so persistent as

to be troublesome, still little relief or satisfaction was experienced from sexual intercourse. He had never had gonorrhœa. His urination was frequent and associated with burning sensations extending along the urethra. He also had a pain located above the pubes, which at times was very severe. Occasionally in the morning on arising he experienced great difficulty in starting his stream. His urine was clear. Rectal digital feel showed the vesicular region to be very tender. The vesicles, although distended, were not indurated, but were soft and easily compressible. As the result of stripping, much non-purulent jellified vesicular material was expressed. The procedure caused the patient to feel very faint, although after the immediate effects of the manipulation had passed off a relief from the symptoms previously complained of was experienced. After subjecting himself weekly for a comparatively short period to the stripping treatment the vesicles regained their muscular tone, and all the symptoms due to the vesiculitis disappeared. This case represented a very light grade of simple inflammation, and, as this inflammation was probably of comparatively short duration, the results obtained from the treatment were speedy and most satisfactory.

CASE V. Chronic Seminal Vesiculitis Originating from a Simple Non-venereal, Non-tubercular Subacute Inflammation. The chief symptoms were frequent urination, seminal emissions, excessive sexual desire associated with a failure of power, nervous reflex, and mental disturbances. A young man, aged twenty-one years, of good physique; a student; had never had a venereal disease, and had not abused himself. His trouble began three or four years previously in the form of frequent seminal nocturnal

emissions, together with an occasional stickiness of the meatus. At that time he sought medical advice, and was treated by anterior injections and by the passage of sounds. His symptoms, instead of getting better, grew rapidly worse. Further medical advice was sought and deep urethral injections prescribed, and, as he did not improve, perineal section was suggested to him, which suggestion he refused to entertain. He then presented himself for the first time to the writer. He had been forced by his troubles to give up his college. He could not read, study, or make any prolonged mental effort without becoming confused. He had many nocturnal emissions, sometimes two in a night. Urination was frequent, and there was a burning sensation along the urethra. There was present much of the time an excessive sexual craving. When, however, he attempted to gratify it his erection entirely failed him, or it failed him prematurely, accompanied by a premature ejaculation. His ejaculations were scanty in volume. He had a muco-purulent discharge sufficient to soil his shirt. He complained that his penis and testicles were cold and clammy and without feeling. He slept poorly at night. The urine was clear, aside from a few shreds and a little extra mucus. Examination of the vesicles per rectum showed them both, and especially the right one, to be brawny, tumefied, and distended, much material being stripped from them. The patient was ordered to take active exercise, which had previously been forbidden him, and cod-liver oil was prescribed, together with stripping once in five days. At the end of a month there was a marked improvement, and in six months the patient was well and had gained thirty pounds of hard flesh.

CASE VI. Chronic Seminal Vesiculitis Originating from a Simple Non-venereal, Non-tubercular Subacute Inflammation. Urethral tenderness and burning. Sexual disturbances. A urethral discharge. Bacilliary infection of the vesicles associated with a constant bacilliary infection of the urine. The origin and early stages of this case were much like that of Case V. In this case, however, the extra and further pathological complication of vesicular germ-infection was added. A young man, aged twenty-nine years, active, of good habit and physique. About ten years ago he had begun to be troubled much by seminal emissions, followed some time afterward by urethral tenderness and burning; also by feelings of discomfort in the perineum. These feelings in the perineum were aggravated by pressure. He, therefore, avoided soft spring-seated chairs, preferring those with hard flat bottoms. He had never had sexual intercourse, although he had been much annoyed by cravings therefor and by painful erections. At times, also, his nocturnal emissions were very painful, and they were often followed by marked mental depression. For the last three or four years he had had a urethral discharge, which he had tried unsuccessfully to cure by anterior injections, and which he had been told was gonorrhœa, in spite of the fact that he had never exposed himself. He had been subjected to many forms of treatment without any relief. One authority had assured him that his trouble lay in the fact that he had a long foreskin. He had consequently been circumcised, but without benefit. At the time of consulting the writer feelings of impotency and loss of all power of erection had taken the place of the opposite conditions which had formerly prevailed. One of the interesting features in this case, however, was the fact that the urine was loaded with

bacteria. There were no evidences of kidney or pelvic disease. The seminal vesicles were both greatly distended and their walls thickened. There was, however, little perivesicular involvement. A large quantity of material was stripped from the vesicles, and the urine voided directly after the stripping was seen to contain a greatly increased amount of bacteria. These germs were examined and found to be bacilli coli commune, no tubercle bacilli or other varieties of germs being present. A seminal emission streaked with blood occurred after the stripping, and the parts were left very sore. After a number of treatments the germs in the urine largely disappeared and his symptoms greatly improved. Before getting entirely well he married, and for a time was troubled by sexual weakness. His vesicles, however, eventually regained their tone and he got entirely well. The bacteria entirely disappeared from his urine before a cure of his vesiculitis was accomplished.

CASE VII. Chronic Seminal Vesiculitis. Non-venereal, non-tubercular. Originating in sexual activity at an early age. Painful ejaculations associated at times with blood. Severe pain in lower back and down the left leg. Burning and painful sensations along the urethra. Sexual cravings. Little satisfaction or relief from sexual intercourse. Melancholia. Could not apply his mind to business without marked mental fatigue. Suicidal tendencies. A man, aged thirty-five years, large and athletic. At the age of twelve years he commenced sexual intercourse. His family lived next to a family in which there were four girls, most of whom were older than himself. These girls initiated him into the performance of the sexual act, and for a considerable period gratified themselves at his expense on all available occasions. At last his family becoming alarmed at his physical condition took

him to a doctor, who told them that he must be a masturbator. He continued to practise sexual intercourse all through his early youth, although to a much less extent than at first. Eventually he married, but, from a fear of having children, his sexual acts were unnatural. He habitually interrupted the completion of the act by resorting to a premature withdrawal. He began at this time to complain of a pain in the lower back and of a sexual craving associated with little sexual satisfaction from coitus, together with sexual weakness and premature ejaculations. His wife then died and he resorted to sexual excesses. The symptoms just enumerated, however, grew worse, and on one occasion, while in the performance of the sexual act, he experienced a severe stabbing pain in the deep perineum, associated apparently with the ejaculatory act. The pain was so severe that he felt very faint, and became bathed in a cold perspiration. Blood also trickled from the meatus. The pain in his back, combined with a shooting pain down the left thigh in the region of the sciatic nerve, was so severe immediately after this attack that a large hypodermic injection of morphine was required to render it bearable. After this accident his symptoms became apparently much worse. He became melancholy and unable to apply himself to his business. If he exerted himself at his business for one day, he would be mentally prostrated for the next day or so. After this, as he had involuntary emissions associated with more or less bleeding, the doctor whom he consulted tried deep urethral applications, but with no success. The case then came under the observation of the writer. Both vesicles, but especially the right, were found to be very tender, indurated, and distended. The induration also did not confine itself to the vesicular

walls, but involved extensively the perivesicular tissues. As the result of the stripping a large amount of inflamed vesicular material, somewhat discolored by blood, dripped from the meatus. The manipulation temporarily intensified to a marked degree the pain in the lower back and in the left thigh. This case, owing to its chronic history and to its extensive pathological indications, led the writer at the time to suspect that it would prove stubborn as regards the treatment recommended for this disease. After three months' treatment, however, the distressing symptoms had so far disappeared that the man was comfortable; and now, at the end of eight months, he feels himself to be perfectly well. The vesicles, however, although showing marked improvement, are not as yet satisfactory to the feel, and will probably require from four to six months' further treatment.

CASE VIII. Chronic Seminal Vesiculitis, Non-venereal, Non-tubercular. The feature in this case was an irresistible desire to masturbate. Involuntary masturbation at times during sleep. Sexual cravings. Sexual powers uncertain. Nervous symptoms. A man, aged thirty years, physically robust. Leads a sedentary life. At the age of ten years he began to masturbate, and continued the practice more or less ever since. He indulged himself sexually at times, and at those times he had little desire to masturbate. During the last two years the desire to masturbate has increased very markedly, and now when the desire seizes him he cannot resist it. One single act also does not suffice to dispel the craving, but it is repeated over and over again continuously, or many times a day for a period of several days. An uncertain period of respite then occurs, during which the act is not prac-

tised. During these periods of masturbation little or no relief from the craving follows each separate act, but each act seems rather to increase the craving, till a sense of physical exhaustion occurs which breaks the attack. Latterly, the act of masturbation has at times become wholly involuntary, as on numerous occasions he has awakened from sleep finding himself practising it. Formerly, by resorting to sexual intercourse, he could dispel the desire for it; but latterly his sexual powers have become so weak that he can only occasionally accomplish coitus, and when he does, he experiences no satisfaction or relief therefrom. His erections also, which formerly were strong, are now weak and of rare occurrence, the act of masturbation even being generally accomplished without exciting or occasioning that condition. Generally after these periods of excessive masturbation he has been troubled with a muco-purulent urethral discharge, which he has subdued by anterior astringent injections. Latterly his hand has become very tremulous, as well as his lips. His mental faculties are, however, good and steady. Indeed, this fact struck the writer as remarkable on first examining the case, and this, together with his frank confession of his troubles, led the author to believe that the cause of the troubles complained of was not psychological, but local in the sexual apparatus. The vesicles were, therefore, examined and found to be chronically inflamed and distended, with thickened walls. A series of strippings were commenced, and hygienic methods of living, including much physical exercise, were also prescribed. After two months' treatment he experienced great relief —the desire to masturbate left him, his sexual feelings, together with his erections, became normal, and his tremulousness disappeared. Treatment was followed up

for several months after the relief from the symptoms had been experienced, and until the conditions of the vesicles seemed satisfactory. The patient was then discharged and advised to marry.

CASE IX. **Chronic Seminal Vesiculitis of Gonorrhœal Origin. Marked vesical tenesmus. Micturition frequent and at times involuntary. Priapism. Frequent sensations of emission, which were involuntary. Almost no fluid ejaculated at the time of an emission. Intermittent urethral discharge.** A man, aged thirty-three years, general health good. He had gonorrhœa seven years ago. Apparently recovered from it, but ever since the attack at times the urinary act has been frequent and rather precipitate. Three years ago he married, but has never had children. Some months ago, after drinking, a urethral discharge appeared, which he had found impossible to cure, although occasionally it would apparently disappear, and since that time he has felt disposed to overdo himself sexually. About a month before consulting the writer, after the passage through the deep urethra of a large-sized sound, the following distressing symptoms appeared, which led him to seek the author's advice: His desire to urinate was very frequent day and night, and at times it was almost incessant, associated with a violent vesical tenesmus. So involuntary and frequent was his urination that a rubber urinal had to be worn. Persistent priapism was also a feature. This symptom was so marked as to be painful, and the more the vesical tenesmus the more the priapism. Associated with the priapism, and especially noticeable at the time of vesical tenesmus, were feelings which seemed to indicate that attempts at ejaculation were being made. No semen, however, appeared at the meatus. In order

to rid himself of the priapism and of the sensations of ejaculation he had recourse to frequent and prolonged attempts at coitus, without experiencing, however, any relief. His urine was purulent, as was to be expected, owing to the violent tenesmus. He was examined for calculus, but none was found. Both seminal vesicles were found to be brawny and very much distended, a large quantity of purulent fluid being stripped out, among which were several clumps of inspissated material, which appeared sufficient to plug the ejaculatory ducts. Although the stripping process caused much pain and made him feel faint at the time, yet he soon experienced some relief from his annoying symptoms. After a few weeks he left the city feeling comparatively comfortable; and after his return to his home, as the result of further similar treatment at the hands of his local adviser, he still further improved.

In this case the vesiculitis had evidently existed for a number of years, without, however, giving rise to any marked symptoms until it was stirred into activity by the passage of the large-sized sound.

CASE X. **Chronic Seminal Vesiculitis of probable Gonorrhœal Origin. Marked sexual weakness. Periods of impotency. Difficulty in voiding urine. Frequent attacks of temporary retention.** A man, aged forty-three years. In early adult life he had gonorrhœa several times, and also indulged himself sexually to excess. A number of years ago he married, and since then he has lived correctly. For several years he has noticed that his sexual powers have been waning, and when first seen his erections were entirely wanting, or, at best, feeble, so that he was able to accomplish coitus only very rarely, and then imperfectly. Corresponding apparently in great

measure with his advancing sexual weakness, a difficulty in voiding his urine manifested itself. This difficulty at the time of his first consultation with the author was so marked that attacks of complete retention lasting several hours were frequent, resort to a hot sitz-bath being, as a rule, necessary in order to start the stream. These attacks of retention generally occurred in the morning on getting out of bed, and at any time when he was at all mentally agitated. The expulsive force of his bladder at best seemed weak, and the latter portion of the urinary act always terminated in a dribble. He had been told that he had stricture, and had been treated therefor. Such treatment, however, instead of benefiting him had proved detrimental. Examination also of the urethra with a full-sized blunt sound showed that no stricture existed. The deep urethra, however, was found to be very sensitive and spasmodic. The urine was clear, with the exception of a few shreds, and contained nothing abnormal, aside from the shreds. There were in the shreds, however, seminal elements. The cystoscope showed the bladder to be normal, and no disease of the spinal cord could be detected. The seminal vesicles, however, were found to be very much distended and thickened and surrounded by an extensive perivesicular induration. This perivesiculitis had all the evidences of chronicity. It was firm, fibrous, non-œdematous, and but slightly sensitive. Stripping the vesicles dislodged a great quantity of thickened gelatinous vesicular material. The stripping treatment, associated with vesical lavage (gr. $\frac{1}{3}$ of bichloride of mercury in 8 ounces of hot water), was instigated. This was followed by slow but progressive improvement. At the end of six months his stream came freely, with good force, and he rarely had times when it was at all difficult

to start the urine. His sexual power also showed much improvement. His erections and sensations were better and more natural. He could accomplish coitus satisfactorily once or twice a week. At this time also the vesicles had improved much to the feel. The perivesicular induration had diminished and become softer, and the vesicular walls less distended and more elastic. At this stage of the treatment the patient disappeared from view, expressing himself as satisfied with his condition. It is probable, however, that the case had not been treated sufficiently, and that gradually the parts if left to themselves would tend to relapse to their former condition. With a more extended treatment, however, the vesicular improvement would doubtless have progressed further and a stage been reached where the advantages obtained would have tended to remain permanent. In a case similar to this one, owing to its great chronicity and to the age of the patient, improvement would naturally be slower than in one of a tenderer age and in whom the commencement of the pathological process was more recent.

CASE XI. **Chronic Seminal Vesiculitis, of probable Gonorrhœal Origin, occurring in an Elderly Individual, associated with Chronic Prostatic Hypertrophy. Active vesicular symptoms first noted seven years previously, following a vigorous treatment for alleged stricture by means of electrolysis. Loss of sexual power. A chronic urethral discharge. Little or no benefit from treatment.** A man, aged fifty-seven years. During youth and middle life he had indulged himself sexually very freely. He had had gonorrhœa several times, and had, so he thought, always gotten over it with little trouble. When about forty-five years he noticed that after any sexual excess a urethral moisture would appear, and would persist for

several days. This symptom became more and more troublesome, and the moisture increased at such times into a muco-purulent discharge. He also noticed that his sexual powers were not what they ought to be. When about fifty he sought surgical advice for these symptoms, and was told that his trouble was due to urethral stricture, and a cure by electrolysis was attempted. The current was so strong, however, as to cause free hemorrhage from the deep urethra—the part where it was applied—together with great vesical tenesmus. After this trial of electricity—and he never allowed another to be made—frequency of urination persisted for a long time, together with painful erections. For a while after this he had sexual cravings and some priapism. These latter symptoms were, however, eventually replaced by loss of erectile power and of, in large measure, sexual sensations. The urinary symptoms also became less troublesome, but a chronic discharge persisted, and free pus could always be found in the urine. At this stage he came under the author's observation. He had a certain amount of urethral stricture, marked senile prostatic hypertrophy, and a very chronic and extensive seminal vesiculitis, complicated with extensive perivesiculitis, in connection with both sacs. The stripping treatment was tried for a time without apparently making any special impression on the vesicular condition or improving the symptoms complained of, and it is probable that at the time of life of the patient, especially when there also exists senile prostatic hypertrophy, this treatment is of little, if any, value. A perineal operation, with division of the strictures and the removal if necessary of a portion of the prostate, might have served to remove or lessen the vesical free pus and the chronic urethral discharge; but,

as the catarrhal vesicles would still be left, the condition of the patient would probably remain unsatisfactory. Extirpation of the vesicles would remove the chief focus of pus, but in the patient's comparatively comfortable state such a radical measure would hardly be called for.

CASE XII. **Chronic Seminal Vesiculitis of Gonorrhœal Origin. Frequent and painful urinations. Severe pain on ejaculation. Chronic urethral discharge associated frequently with blood. A few drops of blood generally followed each act of urination. This case was taken from the list published by the author in his article on "Persistent Urethral Discharges," etc.** (*Journal of Cutaneous and Genito-Urinary Diseases*, June and July, 1894). "A man, aged twenty-seven years, came complaining of a urethral discharge associated with frequent and painful urination. At the end of each urinary act it was customary for a drop or two of blood to appear at the meatus. He also suffered much pain on the occurrence of a seminal emission. These disagreeable symptoms had persisted for two years as the result of a gonorrhœa. In the meantime the patient had been treated at the hands of numerous eminent medical men without relief. His meatus had been cut, large sounds passed, deep and anterior injections used, and topical applications through the endoscope applied, all with the result of aggravating rather than improving the existing state of affairs. Endoscopic examination did show a beefy-looking, granular spot in the deep urethra. Rectal feel showed both vesicles to be tender, distended, and inflamed. Much material, associated with pus and blood, was squeezed from them. It was thought best to leave the granular spot in the deep urethra alone, and to treat simply the vesicles by the usual method, once in every five to seven days. During the first six weeks of treatment,

though the vesicular feel was constantly improving, the patient, made skeptical perhaps by his former experiences, did not admit that he was any better, aside from the fact that painful sensations at the time of seminal emissions had disappeared. Shortly after this time the discharge, the blood, and the frequent painful urinations all disappeared. Then the patient became enthusiastic and wanted to call himself cured. Treatment was continued, however, for some time, until the condition of the vesicles became quite satisfactory to the feel. Since the discharge stopped, now six months ago, the patient has considered himself perfectly well, and he has been well as far as his urinary apparatus is concerned. It has been difficult in this case to impress on the patient the importance of having the vesiculitis entirely cured before abandoning treatment. On this account there may be some future trouble in store for him."

This case has remained perfectly well. He was examined by the author about six months after the preceding account was written, and was then found to be perfectly well. Since then he has married.

CASE XIII. Chronic Seminal Vesiculitis due to Gonorrhœa. In the early history blood was associated much as in Case XII., with a persistent urethral discharge. Urgent and frequent urinations. Pain in the perineum. Sexual disturbances. This case also, like the preceding one, was taken from the author's list in the article referred to. "A man, aged thirty-five years, had a gonorrhœa in 1889, and had not been well since. This statement was made early in September, 1893. During 1890 and 1891 he suffered much from a relapsing discharge associated sometimes with blood. At this period also his urinations were frequent and urgent. In the urine, besides

free pus, there were large clumpy shreds from the deep urethra, with oftentimes some adhering blood-clots. Numerous urethral treatments were tried without benefit, and in 1892 he submitted to perineal section and drainage. From this operation he received considerable benefit. The bloody element disappeared and only a slight gleety discharge remained. His urinations were, however, still quite frequent and urgent. He had pain in the perineum, and he experienced little satisfaction or relief from sexual intercourse. In September, 1893, the seminal vesicles having been found to be distended and inflamed, stripping was tried, and much firm gelatinous material pressed out. This course was continued at frequent intervals for two months, and then more infrequently for three months longer. Under this treatment the discharge soon wholly disappeared, together with the perineal pain, the urinations became normal as regards frequency and urgency, and his sexual sensations were again natural. In all probability in this instance much discomfort, together with the perineal section, might have been avoided had the value of vesicular strippings been known two years or more before. Still there is much satisfaction in making a final cure in such a case."

It seems probable that the rest in this case rather than the cutting was what caused the improvement which followed after the perineal incision. In fact, the first two years of suffering in this case were an almost exact counterpart of that in Case XII. In this case also the sexual sensations, which were intensified during the early stages of the disease, had become inactive before the stripping treatment, and his erections had become weak and uncertain.

CASE XIV. Chronic Seminal Vesiculitis of probable Gonorrhœal Origin. Painful and bloody emissions. Hemorrhage into the cavity of the vesicle resulting from hard stripping. Marked sexual weakness. Sexual desire at times very strong. Urethral and reflex neurotic symptoms. Marked mental disturbances. A man, aged forty-two years, of good physique. In earlier life he had had several attacks of gonorrhœa. Some of them had apparently been slow in getting well, but otherwise had given him little trouble. Some years ago he had been troubled with gleet, but had been cured by the passage of sounds. Formerly he had overindulged sexually, and had considered himself more potent than most men. Of late years, however, although at times amorously inclined, he had found himself always sexually weak, and often the thought of women would be distasteful to him. Latterly also, in order to insure a successful accomplishment of the sexual act, he had felt it necessary to drink freely of beer. Formerly he complained of frequent and debilitating nocturnal emissions. Then they became more infrequent, but when they did occur they were generally painful. The act of ejaculation also during coitus was often acutely painful, and on occasions he noticed that his seminal discharges were bloody. After coitus, and also after involuntary emissions or sexual excitement, he experienced a dull pain in the back and across the kidney region. A severe headache also usually accompanied the pain in the back. After straining at stool, thick, pasty, viscid material generally appeared at the meatus. For some time he had experienced great difficulty in sleeping, and some nights he could not sleep at all. To remedy this he had taken numerous drugs, with, however, no real relief. Oftentimes, in order to obtain rest, he had taken whiskey

in sufficient quantities to produce intoxication. He had become generally very irritable and quarrelsome, so much so, in fact, that he found it difficult to do business. On several occasions he had wholly lost control of himself and had assaulted individuals for really trivial offences. He began to have delusions, and to think that people generally were plotting against him. He said that his friends thought he was going crazy, and at times he felt that he was not responsible for his actions. He sought advice at the hands of several specialists on nervous and mental diseases without benefit. He had been told that his trouble was due to urethral stricture, since at times he had a burning sensation along the urethra, associated with some vesical irritation and frequency of urination, and it was to be cured of stricture of the urethra that he first sought the author's advice. Examination did show that he had anterior urethral stricture to a moderate extent. He had, however, recently been treated for stricture by the use of sounds, and thought he had been made worse by the treatment. His vesicles were examined and found to be extensively involved by a chronic inflammation. Their walls were very thick and hard and knobby to the feel. They were both distended, but the right one more so than the left. There was also a perivesicular induration, which was extensive enough to fill up the space between the two organs. On stripping the sacs a large amount of inflammatory vesicular material was expressed, somewhat tinged with blood. The regular treatment by stripping the sacs was commenced, although a guarded prognosis was given owing to the severity of the symptoms, the age of the patient, and the extent and duration of the pathological process. This treatment was continued for about six weeks, and

had been attended with a moderate relief of the symptoms complained of, when, as the result of a stripping probably somewhat too severe, a copious hemorrhage into the right vesicle took place. The sudden distention of the sac caused the patient to be seized with a painful and violent desire for sexual intercourse, which desire he promptly endeavored to gratify. The result was a copious bloody ejaculation accompanied with much pain. Blood also continued to drip from the meatus for some time after the completion of the act. This hemorrhage increased the vesicular symptoms for the time being, also frightened the patient. He, therefore, sought advice elsewhere. He went to a specialist on mental diseases, and, as this gentleman could not aid him, he sent him to a surgeon, who endeavored to cure the anterior strictures by vigorous dilatation. The result of this last treatment was that the patient was made worse. He then came back to the author and stated that the treatment of stripping the sacs was the only method which had ever done him any good, and that he wished it continued; also that he would not again desert the author, no matter what happened. The stripping treatment was accordingly resumed, and now, after about eight months, the patient is comfortable. He can sleep and attend to business. He is not irritable and can control himself. His sexual power is still very weak, but, as he has no uncomfortable feelings of desire, he expresses himself as satisfied. He rarely also feels the reflex pains in the back. The induration in connection with the vesicular walls and with the perivesicular tissues has been somewhat absorbed. Still much remains. All that can be done for an extreme case like this one is to make life comfortable, a positive cure being out of the question. How much future

treatment this case may require it is impossible to state, but probably a little from time to time will be enough to keep him comfortable.

CASE XV. **Chronic Seminal Vesiculitis. Calculus of the Seminal Vesicle. Gonorrhœa two years before the time of seeking advice. Pain in the lower back. Pain in the testicle. Shooting pains at times extending along the penis. Bloody emissions.** A man, aged twenty-nine years, strong and generally healthy. Had gonorrhœa two years ago complicated with a double epididymitis. For many years has had to get up once at night to void his urine. For a considerable interval, in fact, as he recalls it, almost since the time of his gonorrhœa, he has been troubled with a persistent pain, generally dull, but sometimes sharp, in the right sacral region. While busy and active he is not apt to notice this pain, but when he lies down or sits it always asserts itself, and latterly it has become more severe and troublesome. After working hard he generally experiences a pain in the right testicle. Sometimes he has a pain also above the pubes, which is liable to radiate downward along the penis as a burning sensation. His urine contains a slight amount of pus and more mucus than is normal. He leads an active outdoor life. He thinks little about his sexual function, and has no complaint to make regarding it. He has nocturnal emissions from time to time, and lately he has noticed that they were bloody. The act itself is not painful, but he thinks that the pain in the back is worse after an emission. It was owing to the bloody character of the emissions that the author's advice was sought. Rectal digital examination showed the right seminal vesicle to be boggy and inflamed, presenting to the feel a tumor the size of a hen's egg.

This tumor was made up of the distended vesicle with thickened walls, together with an œdematous circumscribed perivesiculitis. The left vesicle was normal. On stripping the right vesicle a large amount of thick purulent vesicular fluid dripped from the meatus. This pathological fluid was brown, due to the admixture of blood. The admixture, judging from its color and general appearance, was of some duration, and not caused by the stripping. In five days' time the patient reported again. He stated that the stripping had apparently caused him more pain in the sacral region. Examination at this time showed the vesicle even more tumefied than when first seen. On stripping it also a large amount of material was forced out. This time there was much blood, mostly bright red, showing that the bleeding, if not caused by the second stripping, was at least very recent. The manipulation also caused a severe pain in the back. On the night following this second treatment he had a copious emission associated with a stabbing pain. Examination showed this to consist of a large blood-clot, and in the clot a rough calculus resembling a grape-seed in size and shape was found. After the passage of this concretion the patient felt better and the pain in the back was less. A week after this occurrence he reported again for treatment. The vesicle then was about half its former size and not so tender. Stripping it forced out a moderate amount of purulent vesicular material, which, however, was free from blood-stain. After this the patient speedily convalesced, the vesicle being stripped at weekly intervals. This case was a most interesting one to the author. The first two strippings evidently dislodged the concretion and forced it down into and partially along the ejaculatory duct. Then the free hemorrhage into the

sac due to the laceration from the calculus, by overdistending the sac, caused a vigorous contraction, the result being that the concretion was flushed out with the blood-clot.

CASE XVI. **Chronic Seminal Vesiculitis. Gonorrhœa and sexual excesses in youth. Pain at the neck of the bladder. Perineal pain and tenderness. Had to sit on a rubber ring to avoid pressure on the perineum. Attacks of pain radiating from the vesical neck upward toward the right kidney. Sexual power weak and uncertain. Pain on ejaculation, followed by a soreness which persisted for several days. Scanty amount of fluid thrown out by the ejaculatory act. So-called nervous prostration. Numerous reflex symptoms.** A man, aged forty-eight years, not very robust. During his youth he had indulged himself sexually quite freely. Had had gonorrhœa. For a number of years his sexual power had been very weak and uncertain. His sexual desire also had been largely dormant. For a long time he had had an aching pain at the neck of the bladder, associated with a pain and tenderness in the perineum. Pressure on the perineum increased the pain there, as well as at the neck of the bladder. So sensitive had he become to pressure in that part that he habitually carried about an inflated rubber ring, which he slipped beneath him whenever he sat, so as to remove all pressure from the tender area. His urinary acts were natural, with the exception that at night he had to get up once. His urine also was clear and normal. Sometimes the pain at the bladder neck would radiate upward, generally toward the right kidney, or down into the testicles. Whenever he attempted sexual intercourse and was able to accomplish the act, which was seldom, he experienced much pain on ejaculation, and this pain generally persisted as a soreness

for several days afterward. He thought also that he threw off very little semen during intercourse, for at times he would awake just at the termination of a dream where he had experienced all the sensations attendant on an involuntary emission and find that nothing had been ejaculated. At times a copious urethral discharge, unattended by pain or any urethral or vesical symptoms, would appear suddenly, and then after an interval disappear suddenly, rarely yielding, however, to any of the treatments especially directed toward it. Within the last year or two the patient had suffered from mental depression and inability to apply himself. His legs also had felt weak, and he had been unable to walk much, or, in fact, to make any special effort, without great fatigue and feelings of exhaustion, from which it took him several days to recover. Every now and then he was laid up for a day or two by severe neuralgic headaches or by sharp neuralgias in connection with other parts. He had been treated for stricture by sounds, etc., but such treatment had always made him worse. It had also been suspected that he had ataxia. On making a vesicular examination the author found both sacs atonic and very much distended, their walls thickened, and the perivesicular tissues involved. Much material was forced out as a result of the stripping. The vesicles were extremely tender to pressure, the patient almost fainting. The prostate was not enlarged. The prognosis in this case, owing to the age of the patient and the chronicity of the disease, was naturally guarded. Now, however, at the end of nine months of treatment, he is very much better. His sexual force is fair, and there is no pain on ejaculation. In fact, he experiences pleasure and relief from the act. The vesical and perineal pain are present only occasionally, and

then in a mild degree. He does not need his rubber cushion except occasionally, and frequently forgets to take it with him, although the thought of the pain he formerly had makes him wish to have his cushion with him for a safeguard. His legs are stronger, and he can walk much better. He can also apply his mind without fatigue. His vesicles have improved very much—they are but little distended and have much muscular tone. The indurations, however, both in connection with their walls and the perivesicular tissues, have not as yet been absorbed as much as may be expected, and the treatment will be continued for a time.

CASE XVII. **Chronic Seminal Vesiculitis, starting first as a Simple Inflammation, aggravated afterward by a Gonorrhœa. Pain in testicles. Pain along the penis and above pubes. Feelings of coldness and numbness of the penis. Sexual excitability and weakness. Chronic urethral discharge. Seminal material at meatus as a result of straining at stool.** A thin, naturally nervous man, aged twenty-five years. From sixteen to twenty years of age he had overindulged sexually. At the age of twenty years he began to have severe pains in the testicles associated with some sexual weakness and numerous nocturnal emissions. A surgeon on examining him discovered a small varicocele on the left side, and to this the pain in the testicles was ascribed. The varicocele was accordingly operated on and cured, but still the pain persisted, and the patient concluded that the operation had been wrongly done. Another surgeon opened the wound and removed an encysted silk ligature, thinking that the ligature by compressing a nerve might account for the pain. The pain still, however, persisted. At the age of twenty-one years he contracted a gonorrhœa, which

up to the time of his consulting the author no one had been able to cure. He had been cut internally for stricture, and had had large sounds used. The discharge, however, persisted, and the pain in the testicles gradually increased, so at last he was unable to work. He had also become so sexually weak as to be impotent. His urination was quite frequent and painful. There was more or less free pus in the urine, besides a persistent urethral discharge. He was upset mentally. The least mental effort would throw him into a free, cold perspiration. On straining at stool a large amount of glairy material generally appeared at the meatus. He also often had a severe pain above the pubes, generally associated with feelings of vesical tenesmus. For some time he had complained that his penis was cold, shrunken, and numb. In fact, oftentimes on feeling the organ sensation was so wanting that he described it by stating that the penis did not feel as if it belonged to him. Both vesicles were found to be much distended and without muscular tone. The walls, however, were but little thickened, and there was no perivesicular involvement. This, taken with the age of the patient, made the prognosis very good. As the result of three months' treatment the patient went home well, married, and has remained in good condition.

CASE XVIII. Chronic Vesiculitis due to Gonorrhœa. A profuse persistent discharge almost the only symptom of the disease. Gonorrhœal rheumatism. This case was taken from the author's published list, in his article already referred to, on persistent urethral discharges. "A man, aged twenty-nine years, contracted gonorrhœa a year and a half before consulting me. During all this time he had had a very abundant purulent discharge and much free

pus in the urine. In fact, at the time of the first consultation the discharge was as free as one would expect to encounter in the acute suppurative stage of the disease. Besides this he had gonorrhœal rheumatism, which had centred in the right knee. He had tried internal remedies, together with anterior and deep injections, all to no purpose. I examined his urethra carefully. There was no stricture and only moderate tenderness. There was nothing, indeed, to be discovered in the condition of the urethra to account for the excessive discharge. Rectal examination showed the left vesicle to be very much distended, it being about the size of a hen's egg. The perivesicular tissues were indurated and inflamed, and the entire region was quite sensitive, a little pressure giving rise to much pain. On making such pressure considerable fluctuation could be detected, and upward of a drachm of purulent vesicular fluid containing many lifeless spermatoza dripped from the meatus as the result. This consultation took place in June, 1892. My opinion at the time was that extirpation of the purulent vesicle would probably be required in order to effect a cure, as the case seemed most aggravated. Still I decided to make a trial of stripping the vesicle. At the end of a week the case reported again for examination. The vesicle at that time was not so tense as before, and no disagreeable reaction had followed the first treatment. Feeling encouraged by these results, I sent the patient home with instructions to his medical attendant prescribing a continuance of the treatment. Early in September the patient returned and reported that he was no better. On examination the condition of the vesicle was found to be exactly as when first examined. On stripping

the sac a great quantity of the purulent fluid was discharged. The patient told me that his regular attendant had never succeeded in squeezing out anything as the result of his manipulations. The consent of the medical gentleman in charge was then readily given me to continue the treatment myself. After this the patient reported regularly once in a week to ten days. The intervals between treatment were a little too long, but were as frequent as the patient could arrange. Under this systematic treatment progressive improvement ensued. In a little over two months' time the discharge from the urethra ceased and the urine became clear. The material pressed out from the vesicle lost its purulent character and became viscid and somewhat gelatinous. The vesicular tenderness and the perivesicular induration also gradually disappeared. The vesicle, however, still remained distended, with its muscular walls flabby. On this account it seemed very probable that a relapse might occur should treatment be suspended. Accordingly treatment was continued for about six months longer, although during this latter interval the visits did not average so frequent as at first, oftentimes the patient being seen but twice, and on one occasion but once, during a month. At the end of this time the pouchy condition of the vesicle had disappeared, and the organ was able to empty itself as the result of seminal emissions. Since suspending treatment this case has reported occasionally in order to be assured that everything is all right. The vesicle is now performing its functions perfectly. It is normal to the feel, and nothing can be squeezed out of it. There has been no return of the urethral discharge, and the urine is perfectly clear."

CASE XIX. Chronic Seminal Vesiculitis due to Gonorrhœa, the only Subjective Symptom being a Profuse Persistent Urethral Discharge. This case also was taken from the author's published list, as was No. XVIII. "A man, aged thirty years, consulted me for a urethral discharge which had been so profuse for the preceding six months as to saturate several cloths daily. For over a year before the present profuse discharge commenced there had been more or less gleet, which had become quite troublesome after alcoholic excess. There was an early history of several gonorrhœas, which had apparently occasioned only temporary inconvenience. The peculiarity of the present muco-purulent discharge was that, although very profuse, it was not accompanied by any urethral pain or vesical disturbance; in fact, the patient stated that he felt perfectly well in every way, the presence of the discharge being his only discomfort. There was considerable free pus in both the first and second flow of urine. Numerous anterior injections had been tried, many of which would hold in check the anterior discharge so long as employed, but as soon as discontinued the discharge would reappear. On commencing to treat this patient I tried deep urethral instillations of nitrate of silver. The discharge and most of the free pus in the urine would disappear for about twenty-four hours after each of these treatments, at the end of which time there would be a sudden relapse to former conditions. Examination of the urethra showed an absence of lesions sufficient to account for the discharge. Attention was then called to the vesicles, although, as has been stated, there were no subjective symptoms pointing to those organs. The left vesicle was found to be much distended and rather tender. There was, however, but little perivesicular infiltration.

A large amount of purulent vesicular fluid was squeezed out. This case was treated continuously by stripping the vesicle once in five to seven days for six weeks. There was then marked improvement in the volume of the discharge, and also in the condition of the vesicle. At this time, however, the vesicle began to become tender to the touch, and the strippings, which had latterly caused no discomfort, became somewhat painful. The material squeezed out, which had lost its purulent character, began again to show free pus. In fact, I found that my treatment had been a little too vigorous. After seeing him a few more times and stripping gently, as the vesicle still remained tender, though not much distended, the patient was sent off, and the treatment discontinued for the time being. He went away on a three months' trip. At the end of that time he reported for examination. He stated that he was well, and had been wholly free from all discharge for the last two months—ever since, in fact, the soreness occasioned by the strippings had disappeared. Latterly he had been drinking and knocking about with women, no disagreeable after-effects resulting. Rectal examination showed the vesicles to be normal."

In this case the local treatment, although efficacious, had been a little too severe.

CASE XX. Chronic Seminal Vesiculitis probably due to Gonorrhœa. No subjective symptoms. The individual thought himself well until rejected by a life insurance company. A little free pus, a few deep urethral shreds, and a mere trace of albumin in the urine. A man, aged thirty years, very strong and healthy, had gonorrhœa six or seven years ago, which persisted as a gleet for over a year, but which finally disappeared. Since that time he

had thought himself well. About a year and a half ago he married. He was all right sexually. Just previous to his consulting the author he had endeavored to get his life insured, but had been rejected on the ground that there was something wrong with his urine. On examination the urine was found to contain a small amount of free pus, some deep urethral shreds, an abnormal amount of mucus, and a faint trace of albumin. The urethra was examined and one small granular spot in the bulbous region detected. This was easily cured, but by so doing the character of the urine was not improved. A digital rectal examination was then made and a chronic inflammation of both the vesicles discovered. The sacs were but little distended, though their walls were considerably indurated. The parts were not nearly so sensitive to the first exploration as one would expect to find them. A moderate amount of material was pressed out of the sacs, the urine passed directly after the manipulation being much more cloudy and purulent than usual. After a few treatments the urine became much clearer than it had been, and it bids fair after a short course of treatment to get entirely clear and free from shreds. In this case there were no bacteria in the urine and no bacterial infection of the vesicles. The patient is of a phlegmatic, easy-going disposition, which fact possibly in a measure accounts for the absence of subjective symptoms.

CASE XXI. Chronic Seminal Vesiculitis due to Gonorrhœa. Frequent urination. Perineal tenderness. Bacteria always present in the urine, together with a trace of albumin. Increased sexual desire. A man, aged forty-four years, mentally active and of good physique, contracted gonorrhœa five years ago. The gonorrhœa proved very stubborn; and a year and a half after its commence-

ment, a gleety discharge persisting, the surgeon in attendance at the time endeavored, as was natural, to effect a cure by the passage of sounds. On one occasion, after the passage into the bladder of a large-sized instrument, the patient was shortly afterward seized with a violent chill, associated with vesical tenesmus. This was followed by an attack of cystitis, so-called, and double epididymitis. Since that time, although the gleety discharge stopped, the patient has always been afflicted with frequent and urgent urination. He has to get up once or twice at night, and during the day is often called upon to urinate every fifteen or twenty minutes, though when he is mentally absorbed the interval between the acts may be two or three hours. There are constant pain and tenderness in the perineum, together with similar sensations, although these are intermittent, in his testicles. He also at times has pain in the lower back. Since the chill his urine has never been clear. For some time afterward it was purulent, but gradually the free pus disappeared, leaving a permanent turbidity, which had been examined on numerous occasions and found to be due to bacteria. Associated with this bacterial condition was a trace of albumin. He had been told that he was suffering from pyelitis. No casts, however, had ever been found in his urine, although repeated and skilful searches had been made for them. Sexually he believed himself to be all right, though his sensations, so he thought, led him to over-indulgence at times. As his sensations, history, and symptoms, in the author's mind, pointed to seminal vesiculitis rather than to pyelitis from an ascending infection, an examination of the vesicles was made. Both of them, and especially the right, were found chronically inflamed, distended, with thickened walls,

and imbedded in an extensive perivesiculitis. The urine passed immediately after the stripping was found to be loaded many times its usual amount with bacteria. The customary percentage of albumin was also increased. The urine, however, passed some time later in the day contained an abnormally small amount of bacteria, and was, in fact, quite clear. No former treatment directed toward his kidneys had ever perceptibly reduced the bacteria. As a result of the stripping treatment, in less than two months' time the urine became perfectly clear and the albumin entirely disappeared. The perineal and testicular tenderness also markedly decreased, and the urination was not so urgent or so frequent as formerly. Shortly after this time the case passed from observation. Considering the age of the patient and the extent of the disease, the treatment should have been continued much longer, in order not only to insure a thorough removal of the symptoms complained of, but also to guard against a relapse back to the condition existing before the commencement of the stripping treatment. The treatment employed, however, served positively to exclude the kidneys as a source or seat of disease. When the patient became convinced of this fact he experienced so much mental relief that he was content, apparently, to endure his vesiculitis.

CASE XXII. Chronic Seminal Vesiculitis due to Gonorrhœa. Persistent severe pain for years in the right groin. Later on persistent and painful priapism. Severe pain and tenderness in the right testicle. Inability to sleep owing to his sufferings. Numerous, varied, and severe surgical operations undertaken to relieve existing symptoms, with no beneficial results. A man, aged thirty-three years, slight, naturally nervous, but capable of much

endurance, had gonorrhœa about five years ago and has never been right since. After running apparently an ordinary course the urethral discharge stopped and the urine became clear. At that time, however, seminal emissions became frequent and troublesome, and a pain appeared in the right groin. After sexual excitement this pain got worse. On the theory that the pain in the groin was due to a deep urethral reflex, deep urethral injections, sounds, etc., were tried. Instead of relieving the patient, however, these treatments seemed to make him worse. Perineal section, combined with bladder drainage, was after a time tried. This, however, not only did no good, but apparently aggravated the pain in the groin. Then, after a time, one or more of the lymphatic glands in the right groin were removed. The patient, however, became much worse. Not only did the pain referred to the groin persist in an aggravated form, but also persistent and painful priapisms developed, together with great pain and tenderness in the right testicle. So severe did these latter symptoms become that contact with the clothing could not be endured, and a shield had consequently to be worn. Then for some reason, which from the patient's description was not clear, suprapubic cystotomy and drainage in that direction were resorted to. No benefit followed this last procedure. In fact, symptoms previously complained of were, if anything, worse afterward. Then the patient for a long period resorted to a rough outdoor life, on the ground that all his symptoms were of a reflex nature. At this time his sleep was much disturbed, and he became melancholy and depressed. This mode of life not effecting a cure, further advice being sought, the author was consulted. The symptoms of the case pointing toward the seminal vesicles,

these organs received prompt attention. The examination showed the right sac to be the seat of an extensive chronic inflammation. It was very tender and much distended. There were considerable induration and thickening of the vesicular walls, and an extensive perivesicular induration. The left sac was but little affected. On stripping the right sac great pain was experienced, all the existing reflex sensations being for the moment markedly intensified. Much thickened gelatinous vesicular material was expressed, rusty colored, due to an admixture with blood. The vesicular bleeding, however, was not recent, as the color indicated. After a number of strippings the bloody element has disappeared from the fluid expressed from the sac, the perivesiculitis is beginning to soften and to be absorbed, and the subjective symptoms are lessening, much general comfort being usually experienced for the two days succeeding each stripping. The author has no doubt that he can wholly relieve this patient, since the disease is confined to one organ, and since the age of the individual is favorable. In one sense it would have been better to have left the case from this list, since it is not as yet cured. Still the history is of such interest that it was thought best to incorporate it here, even though the treatment is at present so incomplete. The patient states that he shall insist on extirpation of the offending vesicle if the present method of treatment is not curative. The author, however, has no expectation of having to resort to this extreme measure.

CASE XXIII. Chronic Seminal Vesiculitis originating in Gonorrhœa. Constant sexual desire unattended with satisfaction. Great mental depression. Insomnia. Quarrelsomeness. A painful spot in the urethra. Pain in the

testicles. Surgical operation for varicocele, followed by no relief. A man of fine physique, aged thirty-four years. Had gonorrhœa many years ago, but apparently got over it after a time. For the last few years he had had a sensation as if he were losing semen, and after straining at stool thick, pasty material appeared at the meatus. He also suffered from a nagging sexual desire, associated latterly with great sexual weakness. He got little or no satisfaction from coitus. In order to insure an erection sufficient to accomplish the act he used to drink freely of Bass's ale. His urine was clear, and he had no frequency of urination. There was always a sensation as if there were a raw spot in the urethra. This sensation was so persistent that his mind became fixed upon it. He imagined all sorts of causes for the sensation, and became morose. After a time, besides the pain in the urethra, the testicles also became painful. A varicocele was detected on the left side, and it was operated upon. No relief was, however, experienced from the operation, and the patient concluded that it had not been thoroughly done. He then became sleepless at night and resorted to considerable alcoholic stimulation in order to get rest. He was so quarrelsome that he continually got into trouble with his family and business associates. He was looked upon generally as a crank. He finally sought the author to see if a thorough operation on his varicocele could not be assured him. Both vesicles were found to be exquisitely tender, much distended, and moderately thickened. There was, however, but little perivesiculitis. A course of strippings was commenced, and the alcoholic stimulation stopped and much exercise prescribed, no sexual intercourse or excitement, of course, being allowed. After a few months the sensation in the urethra dis-

appeared, natural sleep returned, and the nagging sexual desire disappeared. He stated, in fact, that he had no desire at all, and felt as if he might be impotent. He was assured, however, that the feeling of impotency was not real, and on no account was he allowed to make a trial of his sexual capacity. Since that time, the treatment being continued, all his old symptoms have disappeared or have become so slight as not to cause him annoyance, and he is well satisfied with his condition. The vesicles also have markedly improved, and are, in fact, nearly well.

CASE XXIV. **Chronic Seminal Vesiculitis, Non-gonorrhœal, Non-tubercular. Neurotic and some mental disturbances. Feelings of impotency.** A man, aged twenty-five years, strong and vigorous. Never had gonorrhœa. Soon after puberty he masturbated to a considerable extent until he was twenty-one, after which time he indulged himself sexually and stopped the practice of masturbation. For a number of years he had been very nervous, but otherwise he thought himself all right. Less than a year before the time of consulting the author he had fallen in love with a young woman and had engaged himself to marry her. Since that time he had changed his former mode of life and had ceased indulging himself sexually. After being engaged a few months his troublesome symptoms commenced. These consisted of an entire loss of erectile power associated with sensations of impotency, severe headaches after mental efforts, tremulousness, and inability to control his emotions. He was also troubled much by a general itching sensation, particularly marked in the neighborhood of the eyes. He was very despondent and depressed. Examination showed the seminal vesicles to

be both extremely distended, but soft and non-indurated. They were also very tender. A great quantity of vesicular material, slightly purulent, was forced out as the result of the stripping, leaving the sacs collapsed and atonic. The prognosis in this case was extremely good, owing to the simple character of the inflammation, to the age of the patient, and to the non-indurated condition of the vesicle walls and surrounding tissues. Now, as the result of less than four months of treatment, the patient is well. His mental and neurotic symptoms were the first to disappear. His vesicles have regained their tone, and are firm and contracted to the feel, almost nothing being forced from them as a result of the stripping.

CASE XXV. **Chronic Seminal Vesiculitis, Non-gonorrhœal, Non-tubercular. Melancholia. Neurotic disturbances. Feelings of impotency. Claimed never to have had sexual intercourse. Atrophy of a testicle.** A man, aged twenty-eight years, slender, naturally quiet and studious; had been brought up under very moral influences; denied, apparently with truth, that he had ever indulged himself sexually. No history of masturbation. Had never taken but little physical exercise, preferring to occupy himself with books. As long as fifteen years ago his father, noticing a varicocele on the left side, had had a suspensory bandage applied, and this had been worn ever since. Some years ago the young man began to complain of pain in the testicles of a neuralgic character. This persisting, the varicocele was operated upon and removed. He got no relief, however, from the operation; in fact, the confinement in bed subsequent to it was not well borne. He lost much flesh. The pains in the testicles were much increased, and numerous new and trouble-

some symptoms then appeared; among these were a complete loss of erectile power and penile sensations, such as pain along the urethra, numbness and coldness of the organ. He became very nervous, despondent, and imaginative. He was fearful of going crazy. He could no longer devote himself to books, but sat moping all the time. Within a year or so after the operation for varicocele the left testicle completely atrophied. The patient naturally ascribed the atrophy of the organ to the operation, but whether rightly or not is a question. About three years after the varicocele operation the author was consulted. Both vesicles were found to be in an extreme state of distention; the walls were somewhat indurated; on stripping them the patient cried out and became markedly hysterical. After a comparatively short treatment, however, a great improvement in symptoms resulted, the mental and neurotic ones being the first to disappear. The patient expressed himself as satisfied with his condition, and disappeared before resolution sufficient to satisfy the author had taken place in the vesicles. The organs had apparently regained their muscular tone, but some induration of the walls still persisted. It was interesting to note, however, that the left vesicle and the left portion of the prostate did not seem to be in the least atrophied or affected by the atrophy of the left testicle.

CASE XXVI. **Chronic Seminal Vesiculitis due to Gonorrhœa. A relapsing discharge. Atrophy of the right testicle corresponding to the vesicle chiefly involved. Few subjective symptoms.** A man, aged thirty years, of rather poor physique. His circulation had always been poor. His hands were blue, and he got out of breath easily. As he had always been so affected, he may have had a

congenital malformation of the heart. He had had gonorrhœa several times. He had had an epididymitis in connection with the right testicle twice, and after the second attack the organ completely atrophied. He was first seen by the author about two years after this atrophy. At that time he was suffering from a profuse discharge, which, however, gave him little pain. This followed a vigorous attempt at coitus while wearing a very tight-fitting India-rubber condom, and was consequently due to the effect of an irregular act with a damaged sexual apparatus rather than to a contamination. Under treatment the discharge readily disappeared and the urine became clear, with the exception of a long moulded shred, which under the microscope was seen to consist of vesicular elements. The vesicles were examined. The right was found to be the one chiefly at fault. It was somewhat distended, and the walls were much thickened. Considerable purulent material was pressed out. The prostate was not at all abnormal to the feel, and both lobes were exactly alike in size and consistency. Resolution in the vesicle gradually occurred. This case was also somewhat remarkable owing to the almost entire absence of subjective symptoms, being in that respect similar to Case XX.

CASE XXVII. **Chronic Seminal Vesiculitis of a mild grade in one who had never had sexual intercourse, but who had to a moderate degree practised masturbation. Pains in the testicles. Loss of erectile power. Coldness and apparent want of circulation in the penis. A fancy that there had been a shrinkage in the size of the penis.** A man, aged twenty-nine years, naturally shy and bashful, had never had sexual intercourse, although he had practised masturbation apparently to a moderate

extent for many years. Less than a year ago he became engaged to marry, and then for the first time he felt that there was something wrong. He began to have painful sensations in the testicles; his erectile power disappeared; his penis felt cold and clammy; he imagined that it was gradually shrinking in size. These symptoms, together with the idea that he would be incapable of consummating the marital act, served to cause great mental depression. The vesicles were found to be moderately distended and somewhat thickened. A comparatively little treatment, however, served to correct the existing pathological condition. The erectile power returned, the patient married, and found himself sexually competent.

CASE XXVIII. **Chronic Seminal Vesiculitis due to sexual exertions when very young and to masturbation. Frequent and persistent emissions both at night and by day. Loss of mental force. Great mental depression.** A man, aged thirty-one years, at the age of twelve years or thereabouts began sexual intercourse; at fourteen began to be troubled by nocturnal seminal emissions. These emissions gradually, as years passed by, became more and more troublesome, and at times they would occur during the day as the result of some excitement. Finally he lost all control over them. They would occur without any erection, while straining at stool, while making a mental effort, such, for instance, as adding a column of figures, or as the result of any sudden sensation, as of joy or sorrow. Very little seminal fluid would be ejected as a result of an emission, and sometimes he would experience the sensation only of ejaculation, there being no flow. He became very nervous, sensitive, and depressed. He passed for a

crank, and some even thought him actually crazy. He had been treated extensively by sounds, deep urethral injections, and by methods directed toward his mental state. He had, however, derived no benefit from anything which he had so far tried. On consulting the author an examination of the seminal vesicles was made. The walls of both these organs were found to be thickened; they were somewhat distended and surrounded by a moderate amount of chronic perivesicular thickening. As a result of treatment the vesiculitis markedly improved; the emissions by day disappeared, and those by night occurred only at considerable intervals; he became cheerful and capable of mental effort. Before it was advisable, however, he had to go to his distant home, with the expectation of returning in the near future to complete his course of treatment.

CASE XXIX. Chronic Seminal Vesiculitis due to Gonorrhœa. Sexual excitability. Uncontrollable emissions by day, as well as involuntary ones at night. Severe frontal headaches, especially confined to the temporal region. A man, aged thirty-two years, generally strong and healthy, had gonorrhœa about four years ago. Two years after this he began to have frequent seminal nocturnal emissions. This trouble gradually increased, and uncontrollable emissions by day occurred whenever he saw, heard, or was in any way conscious of anything tending in the least to excite his sexual sense. The volume of fluid ejected each time was small, and sometimes almost *nil*. With this aggravated condition of his sexual function severe headaches began to develop. He described them as located in the temporal region. While they persisted he could do no work. At first he could not account for them, but after a time he felt that they

were aggravated by the emissions; and should he become sexually excited, then he was sure to have one of an especially severe character. He had tried all sorts of remedies for these headaches, without, however, deriving any benefit. In describing his case he always laid great stress on his head troubles, hardly touching on his sexual disturbances. On consulting the author an examination of the vesicles was made, and they were found moderately distended, with their walls somewhat infiltrated. As the result of two months of the stripping treatment the headaches were wholly and permanently cured. The emissions were a little more stubborn, and required a little longer period of treatment before they became properly regulated.

CASE XXX. Chronic Seminal Vesiculitis due to Gonorrhœa. The prominent complaint was what was supposed to be repeated attacks of intestinal colic. Sexual weakness. Feelings of weakness and depression following emissions. A man, aged twenty-nine years, had always been delicate and disinclined to take hard exercise. About three years ago had a gonorrhœa, which was complicated with rheumatism. This disease, however, was apparently cured after some months. About a year and a half ago he began to have what appeared to be attacks of intestinal colic. He had dieted and taken various medicinal courses directed toward this apparent bowel affection, but he had never felt that he had received any benefit from what he had done. For some time after seeing this case the author directed his attention toward the bowels, also without success. It became noticeable, however, that the attacks of pain were not associated with any other symptoms of indigestion, and that their occurrence had no special reference to diet, exposure to

cold, etc., agents which are generally active in producing intestinal colic. As the result of considerable investigation, it was found that sexual weakness existed; that seminal emissions were frequent in spite of regular sexual exercise, and that they were followed by sensations of bodily weakness and depression. He was also languid and disinclined to make mental efforts. The urine was normal. Examination of the seminal vesicles showed them both to be somewhat distended, with moderately inflamed and thickened walls. There was no perivesiculitis. After a comparatively short course of stripping the so-called colics permanently disappeared, followed after an interval by a restoration of his sexual vigor.

CASE XXXI. Chronic Seminal Vesiculitis due to Gonorrhœa. A persistent buzzing or ringing in the ears and head the chief apparent clinical feature. Loss of semen at stool. Sexually weak. Premature emission on attempting coitus. A man, aged thirty-four years, had had gonorrhœa several times in earlier life. For some time he had been troubled by a persistent buzzing or ringing in the head and ears, for which he had sought professional advice on numerous occasions, without experiencing relief. Finally he became interested in a young woman and began to consider the question of marriage. As, however, he had felt himself weak sexually of late, a premature emission often taking place on attempting coitus, and as he had noticed after straining at stool a thick, pasty substance at the meatus, which he took to be semen, he thought it well to seek advice regarding his potency with reference to marriage. He therefore visited the author. A moderate amount of vesiculitis in connection with both sacs was discovered. After a

few months of treatment he discovered that his head affection had entirely disappeared, and, as there was no return of the trouble, it seems fair to infer that it was a reflex phenomenon dependent on the vesiculitis. The sexual function also improved, and after a time he married and disappeared.

CASE XXXII. A Probable Case of Calculus of the Seminal Vesicle Lodged in and Protruding from the Urethral End of the Ejaculatory Duct. Operated upon and calculus removed by Dr. Keyes. Frequent emissions followed by severe pain before the operation. After operation no pain on emission, but the seminal fluid instead of being ejected forward flowed backward into the bladder. A man, aged thirty-two years, had for some time suffered from urgent and frequent urination. He had a slight urethral discharge and a small amount of free pus in his urine. His sexual sensations were intensified. He would have times when priapisms were a troublesome feature. He had frequent seminal emissions. The act of ejaculation, whether associated with involuntary emissions or with coitus, was extremely painful, and left a soreness in the part for some time afterward. He had been examined for vesical stone and none found. He had also been treated for stricture and for inflammation of the deep urethra. He had never experienced relief from any of the treatments to which he had resorted. He finally consulted Dr. Keyes, and that gentleman discovered a calculus which projected into the prostatic urethra from its floor. This calculus was firmly fixed in one spot, and at times could not be detected, it apparently having slipped back into its nidus, so that it did not in the least project into the urethra. At such times, however, it was found that if the forefinger were inserted into the rectum

and upward pressure on the prostatic region exerted, while a good-sized blunt steel sound was passed along the prostatic urethra, that the calculus could always be felt by the sound. Unfortunately, this case occurred a number of years ago, before either Dr. Keyes or the author had directed particular attention to the seminal vesicles. Consequently these sacs were not examined or stripped. A perineal section, however, was made and a rough, hard concretion discovered projecting into the urethra in the position occupied by the mouth of an ejaculatory duct. There were much suppuration and inflammatory induration of the tissues about the concretion, which made it difficult to map out exactly its anatomical situation. It, however, extended downward into what seemed to be the middle of the lower portion of the prostatic body. It was wedged into the tissues so that it was removed with difficulty. Its shape was very irregular. It weighed about ten grains. After the operation the painful element associated with the ejaculatory act wholly disappeared, together with the intensified sexual sensations; in fact, he felt himself somewhat sexually weak. The seminal fluid also at the time of ejaculation, owing to the injury done the prostatic urethra consequent on the removal of the stone, instead of being directed forward flowed backward into the bladder. Of course, the author cannot be positive that this case represented one of calculus of the seminal vesicle, the concretion having gradually worked its way along the ejaculatory duct, aided largely, owing to its size, by ulcerative processes. Still, the sexual sensations associated with the presence of the calculus, together with their disappearance after its removal, the new symptoms present after convalescence from the operation, and the position of the stone, would make

the supposition that it was a case of this description most tenable. If Dr. Keyes had had the seminal vesicle in mind while operating, he would probably have been able at the time to make an actual anatomical demonstration of the vesicular source of the stone.

CASE XXXIII. **Chronic Tubercular Seminal Vesiculitis in one who had had Gonorrhœa. A persistent urethral discharge the chief clinical feature. A secondary epididymitis.** This case was taken from the author's list in his article on "Persistent Urethral Discharges," etc., reference to which has already been made. "A man, aged twenty-seven years, had gonorrhœa, followed for more than a year by a persistent discharge. The patient was tall, thin, and strumous. He never took much exercise, and spent little time out of doors. Examination of the urethra showed it to be granular and somewhat strictured. These conditions yielded to treatment; but a considerable mucous discharge still persisting, the vesicles were examined. These sacs were found to be slightly tender and somewhat thickened, a fair amount of fluid being squeezed out. After stripping the vesicles a few times the discharge stopped, and the patient disappeared satisfied with his condition. The feel of the vesicles, however, as the result of the few treatments had not improved. In about three months the patient reappeared, stating that after free sexual indulgence the discharge had reappeared. The vesicles at this time, although not tender, were much more thickened than when first observed, the infiltration extending into the perivesicular tissues; the prostate also seemed firm and somewhat enlarged. The condition being considered tubercular no further local treatment was deemed advisable at the time, cod-liver oil and hygienic measures

being prescribed. A short time afterward the tubercular process extended to the left epididymitis, involving it in a characteristic manner. This patient when last seen was improving slowly under general treatment."

This case is characteristic of a large class. Here it is observed there are no sexual disturbances. By irritating the parts, however, as by a sound, deep injection, or a too vigorous stripping, such symptoms probably would be temporarily produced.

CASE XXXIV. **Subacute Tubercular Seminal Vesiculitis. Gonorrhœa many years previously. Tubercular antecedents. Chief clinical feature a free urethral discharge, promptly showing itself after sexual excess combined with champagne. This case was also taken from the same list as Case XXXIII.** "A man, aged thirty-four years, came for a discharge two months old, which appeared directly after an excess of champagne and sexual intercourse. He had had gonorrhœa years before. His urethra had been examined for stricture with negative results. His present discharge had not until recently caused him any pain or inconvenience aside from its presence. Shortly before coming for consultation he had made a trial of sexual intercourse. The act had caused him considerable pain, and had aggravated his condition. He had received no benefit from injections. Rectal examination showed both the vesicles to be inflamed, nodular, and somewhat distended. A few gentle trials of vesicular strippings were made, but had to be abandoned, as the parts became more nodular and infiltrated. Whiskey in stated amounts and cod-liver oil were then prescribed, together with hygienic measures, all local treatment being stopped. The patient, who before had been anæmic and somewhat wasted, speedily improved, both

locally and generally. Now, at the end of three months, the vesicles, although a little distended, have lost their nodular, infiltrated feel; and the discharge, which persists very moderately, has no longer its purulent characteristics, but has become watery."

CASE XXXV. **Chronic Tubercular Seminal Vesiculitis. Never had gonorrhœa. Pains in the perineum, and at times in back and thighs. Vesical irritability. Symptoms aggravated by sexual intercourse. Fever generally after much exertion. Much perivesiculitis.** A man, aged thirty-two years, fat, but anæmic, inherits phthisical tendencies. Never had gonorrhœa. Knew no cause for his illness. One and a half years ago he suddenly began to feel an uneasy sensation in the perineum, which was aggravated by jolting, walking, nervous fatigue, or by a full bladder. Oftentimes, also, he noticed that his bladder felt irritable, and that his urination was frequent. Latterly he had been obliged to get up once or twice at night to urinate. Sexual intercourse if at all excessive aggravated his symptoms. He had had numerous feverish attacks, associated frequently with light chills. These generally came on after much exercise, especially if exposure to cold followed. When these feverish attacks occurred the pain in the perineum would be intensified, and added to it there would be pain in the lower back, which often radiated down into the thighs. These symptoms had so weakened him that he had been forced to quit work. His appetite had left him and his digestion was poor. Such was his condition when he first reported to the author. With the exception of a few shreds, there was nothing abnormal in the urine. Rectal exploration, however, revealed the existence of much inflammation. The space beyond the prostate was so

filled in by a hard inflammatory exudation that it was impossible to make out the posterior border of the prostate. This exudation extended backward further than the finger could reach. It surrounded and imbedded both seminal vesicles. It also extended laterally beyond the vesicles and bound the whole post-prostatic space firmly to the fixed structures of the pelvis. The situation of the vesicles could be made out by the extra heaping up about them of the inflammatory exudate. The prostate also was enlarged and rendered immovable to pressure by reason of its connection with the exudation. The vesicular region was not very sensitive to pressure; much less so than was usual. Gentle stripping at this time over the prominences which marked the situation of the vesicles, owing to the firm, unyielding character of the inflamed tissues, served to press out very little material from the sacs. A few strippings at weekly intervals were tried, although the tubercular characteristics made it doubtful if much or any benefit would be derived from it. After two or three strippings he thought he was better; then, however, he grew worse, as evidenced by a tendency to feverishness and by severe pains in his back and thighs, as well as in the perineum. The finger also showed the parts boggy, œdematous, and more inflammatory than when first seen. Thus it was evident that the local treatment was not suitable in a case of this description. He digested cod-liver oil poorly. He was finally ordered to Colorado, it being evident that if a cure was to be effected it would have to be accomplished by climatic influences. Extirpation of the vesicles in a case of this nature, owing to the extent and firmness of the inflammatory exudate, would be very difficult of accomplishment, and would certainly

not be entertained until a trial of change of climate had proved a failure.

CASE XXXVI. **Chronic Tubercular Seminal Vesiculitis. No gonorrhœal antecedents. Free suppuration. Pain in the rectum and perineum. Great irritability of the bladder due to involvement of the vesical neck.** A man, aged forty-nine years, debilitated by pulmonary tuberculosis, had experienced for some time pain in the perineum and rectum, especially noticeable after exercise or straining at stool. These symptoms were followed by a tubercular epididymitis in connection with the left testicle. Shortly after this symptoms of vesical irritability occurred. There were no sexual symptoms. The patient then came under the author's notice. The left seminal vesicle to the rectal feel appeared the size of a hen's egg, soft, and fluctuating, gentle pressure forcing out much purulent material. The right vesicle was infiltrated, rather firm, and involved to a very much less extent than the left. There was considerable perivesiculitis, which was of a soft, œdematous nature, and not sclerous as in the preceding case. There was some free pus in the urine, and a urethral discharge which came from the deep urethra. Some months after first seeing this case the tubercular condition became so marked at the neck of the bladder that the symptoms of tenesmus and pain on urination grew unbearable, and a suprapubic incision for urinary drainage in that direction was made. Some comfort was derived from this procedure, but death followed in a few months, chiefly due to the lung-affection. In this case, when first seen, if the condition of the lungs had warranted it, extirpation of the left seminal vesicle, together with the cord and epididymitis, might have done much good. Such an operation would

not, to be sure, have removed all of this focus of disease, but it would have removed the most active portion of it, and this might have prevented the rest from extending so rapidly. Still, even in an extreme condition such as this was, the results of conservative methods, provided the lungs had been sound, might have been better than those derived from extirpation. It is not the direct result of the operation which is to be feared in a case of this nature, but the long succeeding confinement in bed. In a purulent tubercular condition such as this stripping of the vesicles is not well tolerated, and should not be attempted.

CASE XXXVII. An instance of defective circulation and of general debility in which symptoms existed such as are often associated with Chronic Seminal Vesiculitis. No disease of the seminal vesicles. In a case such as this all the functions are weak, therefore weakness of the sexual function has no special significance. A man, aged twenty-two years, frail and delicate, and had been so all his life. Hands and face were blue. There was a cardiac murmur which had the indications of being congenital. His chest-expansion was very defective. He could not walk up stairs or at all fast without getting out of breath and feeling faint. His digestion was weak. He had much dyspepsia. His bowels were sluggish and constipated. His mental faculties were easily tired and were lacking in force. For several years he had had frequent emissions, sometimes occurring by day and being involuntary. His erections were very feeble, and his sexual desire was almost *nil*. Once or twice in his life he had attempted coitus, but at such times he had in great measure failed, through want of sufficient erection and through a premature ejaculation. Strange as

it may appear, though this man had consulted many doctors before calling on the author, the opinion he had almost invariably received was that his sexual weakness was the cause of his general debility, and if that could once be remedied that then a general improvement would speedily occur. Masturbation had been ascribed by most of the authorities consulted as the original cause for the sexual weakness in this case, in spite of the fact that the patient denied ever having restorted to the practice more than on a very few occasions. The patient's account of his experiences with numerous doctors in regard to this point of masturbation was interesting. Some had tried to bully him into making an open confession; others had flatly told him that he was a masturbator, that they did not care whether he denied it or not, as the evidences of it were apparent in the appearance of his eyes, in his expression, etc.; while others had implored him to make a confidant of them in the matter, on the ground that the confession would never go further. The author's opinion was that the young man did not have sufficient energy to be able to abuse himself by masturbation, and on questioning him he admitted that whenever he had attempted masturbation or coitus the feeling of exhaustion afterward had been extreme. Examination of the seminal vesicles showed no disease in those organs. The patient was told that his sexual organs were no weaker than any of his other organs. He was advised to disregard entirely his sexual symptoms, and to leave those organs alone. Hygienic measures were prescribed, especial attention being directed to chest-expansion and to testing and developing the latent muscular force of the heart. He was advised to take more nourishment, as much easily digested, highly nutritious food being advised as it was

possible to digest. With this opinion the case passed from notice. It is probable that a case of this description could be made comfortable by the course prescribed, but, as the individual in question had always been pampered and indulged, it is doubtful if the directions were carried out.

CASE XXXVIII. **Hysteria, simulating in many ways Chronic Seminal Vesiculitis.** A man, aged thirty-five years, strong and athletic, had had gonorrhœa three years ago. Since that time he had read and consulted many authorities on this subject, and worried much lest his trouble might remain latent and incurable. This last idea had really upset his mental equilibrium somewhat. He hinted vaguely that, owing to some trouble, he could never in all probability marry. He became moody and reclusive. He had tales of accidents that had befallen him during treatment at the hands of the medical advisers whom he had consulted. One gentleman had simply searched him for stricture, and as a result he had been laid up in bed for some long period in such pain that he could not move. The painful symptoms, however, that he had experienced at that time as the result of cross-questioning were found to be vague and fantastic. Another adviser was sought, and for a time the patient stated that he improved; but finally that surgeon, as the result of some endoscopic application, so injured him, in his estimation, that he had to go to bed again for a long period. The next man he consulted, after hearing his story, refused to touch his urethra, but gave him an alkali. The patient thought that after a time the alkali had thinned his blood and made him anæmic. He therefore had no good word to say for this surgeon. Latterly he had not con-

sulted anyone in particular, but still had suffered most of the time, sometimes from sensations in the perineum, at others from urgent urination associated with pain. When he first consulted the author his complaints were as follows: A sore feeling in the rectum after defecation; a pain above the pubes, aggravated by straining at stool, by erections, or by much exercise; a stickiness at the meatus after erections; a burning sensation at the end of the penis and a feeling of vesical tenesmus after urinating. He was easily excited in a sexual way, and after such occasions all his painful sensations were much intensified. He had read the author's article on seminal vesiculitis, and had become convinced that all his trouble lay in the seminal vesicles. His urine was clear and normal, with the exception of a few fine filmy shreds. Examination of the vesicles showed nothing abnormal, though while the finger was being introduced into the rectum the patient became quite hysterical. After some days he returned and stated that he thought the rectal exploration had done him good, and that he wished it repeated. This was accordingly done. The next day a letter was received stating that the treatment had been too severe; that he was in bed; could not move, and was fearful that he would be laid up for months as a result of the treatment to which he had just been subjected. A visit was accordingly made upon him. He had no temperature, and his urine was clear. By diverting his attention it was seen that he could move about and make motions, which on previous questioning he had stated he could not make. The author accordingly gave him a very sharp rebuke, ordered him out of bed and to take exercise. He was told that his troubles were hysterical; that they befitted a woman rather than a man; that he had nothing the matter with him; that

he should stop reading medical articles; that he should go to work about his business and get married. The patient was not seen again for some months, at the end of which time he appeared stating that he felt very grateful for the advice that he had received. He had followed the course laid out for him. He then realized that his symptoms had been largely the result of a morbid imagination. He felt himself well and was happy.

A much longer list of cases, and some of them of interest, could have been given. Still, in the author's opinion, a study of those herein detailed will be sufficient, together with an acquaintance with the earlier chapters, to enable others to accomplish much in the management of disease of the seminal vesicles.

INDEX.

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