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STERILITY AND IMPOTENCE

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ULTZMANN

ARTHUR COOPER

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STERILITY AND IMPOTENCE IN MAN

ON

STERILITY AND IMPOTENCE

IN MAN

BY

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PROFESSOR IN THE UNIVERSITY OF VIENNA

TRANSLATED WITH NOTES AND ADDITIONS

BY

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PREFACE.

THE Original Title of the monograph, which with the Author's permission I have translated in the following pages, is "Ueber Potentia generandi et Potentia coeundi," and it forms one of the numbers of the *Wiener Klinik* for 1885.

At the end of the Translation I have added some supplementary notes on Sterility, as well as a few general remarks on Impotence and its congeners, which I hope may be of use to the English practitioner in the study of Professor Ultzmann's excellent little work.

ARTHUR COOPER.

20 Old Burlington Street, W.
June, 1887.

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ON

STERILITY AND IMPOTENCE IN MAN.

INTRODUCTION.

The due recognition of Sterility in man is of quite recent date. Not long ago, it was generally assumed that men who were capable of properly performing the sexual act were capable of procreation; and in unfruitful marriages the fault was usually attributed to the wife, with the result that she only was submitted to treatment, and naturally for the most part without success. It is only since more attention has been given to the examination of the semen with the microscope, as well as to the various morbid processes which may give rise to sterility in the male, that it has gradually become recognised that a potent man is not always a fertile one.*[1] Procreative power depends entirely on the quality of the semen, while the term potency implies merely the power of copulating; and this power is very often perfect although the semen be altogether devoid of fertilising properties.

* The numbers in the text refer to notes by the Translator at the end of the book.

It is a well known fact that so-called impotent men who are only capable of imperfect coitus sometimes become fathers, provided the semen be in a healthy condition. There are also on record, cases in which conception has taken place without any rupture of the hymen, ejaculation having occurred at the vulva or in its neighbourhood. Dr. G. Braun has published interesting examples of this kind. Again, women in labour are sometimes admitted into lying-in hospitals with the hymen uninjured. Thus, the generative power is mainly dependent on the character of the semen; and it frequently happens that a man who fully performs the sexual act fails to impregnate his wife because the semen is sterile.

In the following pages the question of Sterility will first be considered, and afterwards that of Impotence with hints on treatment.

CHAPTER I.

STERILITY.

As the procreative power depends so largely on the quality of the semen, it will be necessary to begin by considering its condition in health and in disease. In its normal state, the semen of a healthy man is an alkaline fluid of starch-like appearance, and with a peculiar odour. The quantity emitted at one time varies greatly according to the abstemiousness or otherwise of the individual; but from ten to fifteen grammes may be taken as the average under ordinary circumstances.[2] When coitus is repeated at frequent intervals, the quantity gradually diminishes until at last only a few drops appear; at the same time the number of spermatozoa becomes less and less, until finally they are only seen singly in the field of the microscope, or, if they were originally few, none at all may be discoverable.[3] The seminal fluid when fresh, is of a viscid honey-like consistence as long as it is warm; as it cools it becomes temporarily gelatinous, and afterwards changes into a thick liquid. The semen is a complex fluid consisting, after it has escaped from the urethra, of the secretions of the testes, vesiculæ seminales, prostate, Cowper's glands, and the glands of the

urethral mucous membrane. Should one or other of these constituents be absent, sterility may, in certain circumstances, be the result.

According to Vauquelin semen contains 10 per cent. of solid matter and 90 per cent. of water. Of the solids six per cent. are organic, including the spermatozoa, three per cent. earthy phosphates, and one per cent. alkalies (chloride of sodium). According to Hoppe-Seyler the semen contains an albumin substance called spermatin, which resembles casein in reaction. The spermatozoa contain lecithin in considerable quantity.

When normal semen is examined under the microscope it is seen to contain, in addition to the spermatozoa, seminal cells, epithelium from the prostate and urethra, and molecular detritus—the so-called seminal granules. (Fig. 1). Before puberty as well as in old age the semen contains no spermatozoa but only the granules; still the semen of men well advanced in life often contains numerous spermatozoa.[4] The seminal granules are sometimes found attached to certain cylindrical bodies, and when this occurs, the appearance presented resembles to some extent that of the darkly granular renal casts of chronic Bright's disease. The seminal cells represent the spermatozoa in an embryonic state; and, according to Kölliker, a spermatozoon is developed from each nucleus.

When semen is collected in a test tube and allowed to stand for a few hours, it separates into two layers, which, in a normal state of the fluid,

are of about equal thickness. The lower stratum is white, opaque, and consists of the cellular elements; while the upper one is transparent, has the appearance of whey, and contains only a few cells and molecular detritus (seminal granules). From the thickness of the lower stratum an opinion

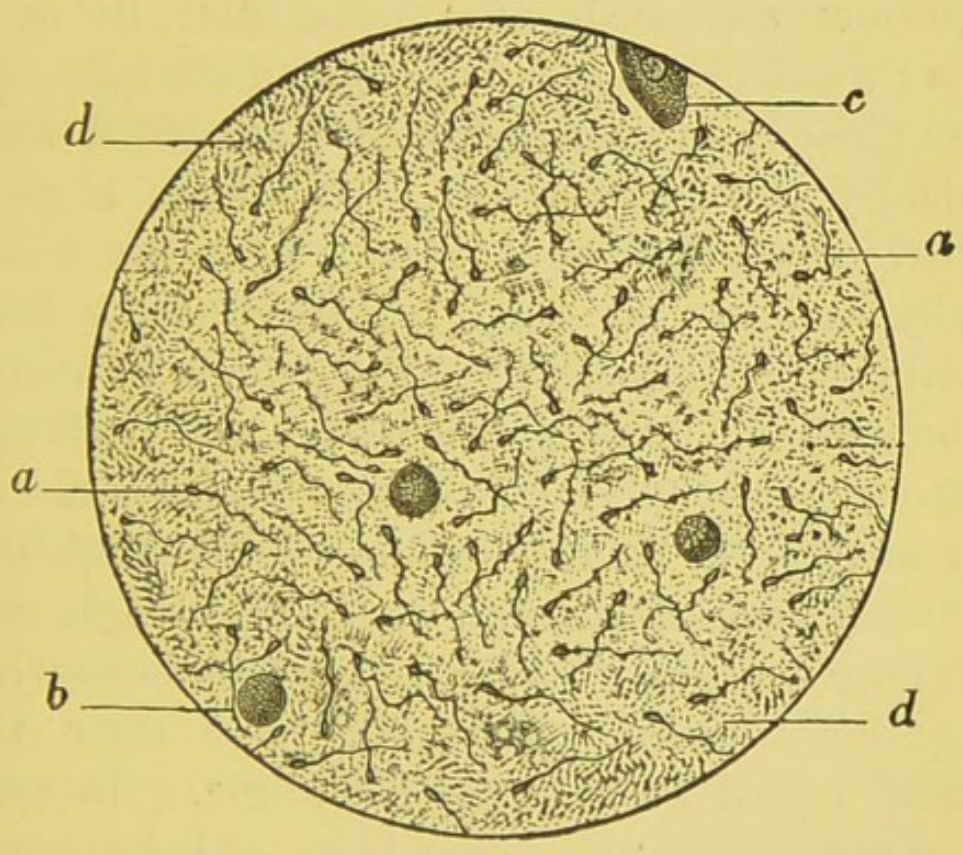

FIG. 1.—NORMAL SEMEN.

a. Living Spermatozoa. *b*. Seminal Cells. *c*. Epithelium (from the prostate ?). *d*. Seminal granules. × 300.

may in certain conditions be formed, as to the fertilising power of the fluid. Normal semen contains spermatozoa in large numbers, and in a fresh specimen they are seen to move rapidly across the field of the microscope. Many thousands of sper-

matozoa are discharged at a single emission, and a drop placed under the microscope presents a degree of movement, not unlike that produced by disturbing an ant hill. Healthy semen should show with a No. 7 objective and No. 3 eye-piece (Hartnack) at least a hundred spermatozoa in the field at one time.

Spermatozoa consist of a thicker part, the head, and a thread-like appendage called the tail. Between these is an intermediate portion which tapers gradually towards the tail. The head is pear-shaped or shovel-like in form, and the tail is usually at least ten times as long as the head, sometimes much longer. In a specimen of healthy semen suitably protected from the action of light and cold, living spermatozoa can be detected even after forty-eight hours.[5] Those which have died gradually after ejaculation present a straight or at most only a slightly curved tail, while those which were dead before ejaculation, have their tails spirally coiled or bent at an angle. In cases where the spermatozoa have been killed by some injurious secretion, urine or the acid vaginal secretion for example, this condition of tail is also usually found. In fresh semen the movement of the spermatozoa is very active,[6] the head being propelled forwards by a whip-like wriggling of the tail, and accurately steering a course across the field of the microscope without coming into collision with other cell-forms in its progress. It was probably these movements that originally led observers to

look on the spermatozoa as organised living animalcules, and thus to give them the name by which they are still commonly known. Water quickly arrests their movements, and also not uncommonly causes the tail to roll up and form a loop; but their movement may be restored by concentrated solutions of alkaline salts, sugar, albumen, urea, etc. Animal secretions of alkaline reaction and moderately concentrated form, also favour the movements of the spermatozoa; but thin fluids, such as urine, acid secretions, and other acid fluids, solutions of metallic salts, and the action of cold arrest them.[7]

The pathological changes which affect the semen are manifold. The variations in regard to quantity will be first considered.

Aspermatism.—By this term is meant a condition in which there is inability to ejaculate semen either during coitus, or under the influence of any other kind of sexual excitement or irritation. Aspermatism may be absolute or relative, permanent or temporary. The absolute and permanent form is rare, and may be congenital or acquired.

Congenital permanent Aspermatism.—Under this head are included cases in which semen has never been emitted under any circumstances. I have observed a case of this kind in a man, aged 40, who had been married ten years. His testes were small, but in other respects the sexual organs were normal. No ejaculation had ever taken place although he was fairly potent in coitus, during

which the patient said he experienced a feeling as of ejaculation as well as some degree of gratification, but no semen had ever appeared. The urine passed after the sexual act was examined with the object of ascertaining whether semen passed into the bladder, but the result was negative. Another case, which I have published elsewhere, was that of an unmarried man, aged 24, who consulted me with regard to marriage. He stated that he sometimes had erections, and that he was capable of sexual intercourse which, however, did not afford him any marked gratification. He had never had an emission either during intercourse or from other sexual irritation, or during sleep. The penis and testes were of natural size, and examination of the prostate and region of the vesiculæ seminales revealed nothing abnormal. A catheter was passed without any difficulty. The urine was examined daily but it never contained any spermatozoa. There was no history of gonorrhœa or syphilis. Faradisation of the testes was tried with the object of stimulating secretion, but without success. A year later the patient wrote to say that he had abandoned all idea of marriage as his condition remained unchanged.[8]

For this form of permanent aspermatism there is, as a rule, no discoverable cause. The condition seems to be simply inherent in the individual. The fact that the testes in the first case were small is of no importance; for small testes often secrete a perfectly fertile semen, and no conclusion as to

the quality of the semen ought ever to be drawn from the size of these organs. In neither of the cases was any lesion of the nerve-centres discoverable. One can only say with Schulz, that in such cases there is a want of reflex excitability in the centre which presides over ejaculation.

In absolute aspermatism, the only constituent of the seminal fluid that is present is the small quantity of sticky mucus secreted by the urethral glands, mostly at the time of erection; and from the description of patients it would seem that besides the absence of ejaculation, the spasmodic contraction of the perineal muscles, which ought to complete it, is also absent.

Acquired aspermatism.—This is more frequent than the congenital form. The acquired forms of permanent aspermatism are usually due to some diseased condition of the prostate, most commonly perhaps to partial or complete suppuration of that body. To cause permanent aspermatism both of the ejaculatory ducts must have become impermeable, and the greater part of the glandular tissue of the prostate destroyed. The destruction of one ejaculatory duct sometimes causes a diminution in the total quantity of the semen, but usually not to a noteworthy extent.

A man about forty years of age came from Roumania to consult me on account of aspermatism, which had followed retention of urine and perineal abscess, in connection with an attack of gonorrhœa some years before. He had previously been able

to complete coitus in the ordinary way, but after the trouble above mentioned he had never had an emission. He said that at the end of the sexual act he felt a kind of orgasm, but there was no discharge of semen. In the region of the bulb the urethra was slightly narrowed, and there was a deep contracted scar in the perinæum. Per rectum, a flattened knob about the size of a pigeon's egg could be felt at the site of the prostate, while the anterior wall of the rectum was deformed by cicatricial tissue. Thus, it seems most probable that the aspermatism in this case was caused by obliteration of the ejaculatory ducts and suppuration of the prostate. No improvement followed dilatation of the stricture.

Another case which bears on this subject was that of a man, aged thirty-one, who consulted me for aspermatism. He was married, but had no children. Coitus had always been completed in the ordinary way until a year before he came under observation, since which time no semen had been discharged, either during intercourse or during sleep. The patient complained also of frequent micturition, and of a burning sensation during the act. He was delicate looking, had a hoarse voice, and had suffered for some years from an affection of the chest. There was dulness at both apices. The urine contained much muco-pus. An instrument passed easily as far as the prostate, but its introduction into the bladder was troublesome, and caused great pain. By rectal

examination a hard irregular immovable tumour, as big as one's fist, could be felt. I concluded that tuberculosis had invaded the prostate and occluded the ejaculatory ducts.[9]

Temporary aspermatism.—Besides the preceding varieties of aspermatism, there is a temporary one which occurs with a relatively normal condition of the sexual organs; it comes on suddenly, lasts for some weeks, or even months, and disappears as suddenly as it came. In such cases the patient is generally in a highly nervous state; either he is naturally nervous, or has become so through venereal excess, masturbation, or repeated attacks of gonorrhœa. In the former case there is usually a feeling of anxiety and fear of not being able to perform the sexual act, which sometimes has the effect of making the patient impotent, and sometimes aspermatic. In the latter case gonorrhœa seems to be the immediate cause of the nervous trouble. These patients are usually only aspermatic in coitus, and they not uncommonly suffer from frequent emissions during sleep. Such cases may be met with after inflammation of the testes, and catarrh of neck of the bladder following gonorrhœa. The affection is for the most part a reflex neurosis excited from the prostate, and tends to disappear under appropriate local treatment.

Relative aspermatism is very rare. The term is applied to cases in which semen is not ejaculated during coitus, even though this be con-

tinued till the patient is obliged to desist through fatigue. As soon, however, as he has fallen asleep, emission takes place. The following case of this kind was under my observation for a whole year. A young man, healthy and vigorous, who had been married two years, had never been able to ejaculate during intercourse, emission only occurring subsequently during sleep. He stated that the sexual act was not attended by any pleasurable sensation. This patient had never attempted intercourse before marriage, and had never suffered from any disease of the sexual organs.

The total absence of voluptuous sensation during intercourse in this case obviously points to the nervous system as the cause of the defect, especially as both the sexual organs and the seminal fluid were in a normal state. It could only be attributed to non-excitability of the ejaculation centre by coitus, seeing that emission occurred in the ordinary way during sleep.[10]

False aspermatism.—There are some other forms of aspermatism which may best be described by the term *false*, namely, those in which semen reaches the urethra, but is prevented from escaping externally by narrow stricture or other obstruction of the canal.

As the caput gallinaginis swells during erection and thus closes the passage towards the bladder, and as at the same time the strictured portion of the canal is rendered still narrower by the urethral congestion, the pain felt in the perinæum by these

patients during ejaculation is explained by the retention of the semen in the portion of the urethra between the stricture in front, and the caput gallinaginis behind. As by degrees erection subsides, so also does the swelling, and the semen then usually flows backwards into the bladder and mingles with the urine, though a certain quantity may pass forwards and appear at the urethral orifice. Such cases are curable by dilatation of the stricture or removal of the obstruction whatever it may be.[11]

In complete and permanent aspermatism the patient is of course sterile. In relative aspermatism also, sterility will exist until by some means the semen can be made to reach the female organs. In such a case artificial fecundation with freshly discharged semen might succeed, provided that fluid were in a healthy state. In temporary aspermatism the fertilising power depends entirely on the condition of the semen at such times as the patient is able to ejaculate. Sterility due to stricture or other impediment to the passage of the semen will, *cæteris paribus*, cease with removal of the obstruction.

Polyspermism.—This condition, which is relatively rarer than aspermatism, is one in which there is a considerable increase in the quantity of seminal fluid discharged at one time. Under the microscope the appearances are normal, and the number of living spermatozoa large. The quantity of semen may be double or even three times what

is usual. If the fluid be allowed to stand in a test-tube it will mostly be found that only the liquid portion is increased, and that the cell elements and spermatozoa show no actual increase in comparison with a normal ejaculation.

A bachelor, aged forty, consulted me on account of this condition. He stated that the women with whom he cohabited always remarked on the excessive amount of fluid ejaculated, and that one of them had even accused him of micturition during the sexual act. The semen emitted at one time during coitus was repeatedly collected in a capote and brought to me; the quantity when measured usually reached thirty-five grammes. The patient was an exceedingly nervous excitable man, and complained also of strangury and polyuria. Examination of the sexual apparatus revealed nothing abnormal.

Oligospermism.—By this is meant the emission of semen in very small quantity. The amount discharged at one time varies usually from two to five grammes. This condition is very common in advanced age, as well as after gonorrhœal orchitis and prostatic diseases. In the latter case the diminution of the seminal fluid is due to the absence from it of one or other of its constituents as the case may be. For example, when the vasa differentia are blocked, the testicular secretion will be absent, and after inflammation of the seminal vesicles or prostate, the secretion of either of these may be markedly diminished. Thus,

oligospermism is frequently associated with azoospermism or absence of the spermatozoa.

Changes in the colour of semen.—It has already been mentioned that normal semen is a fluid of a whitish starch-like appearance. Linen spotted or stained by it becomes stiffened when dry in a characteristic manner, and the spot when recent is greyish-white in colour, with a narrow brownish-yellow margin. In disease, especially of the sexual organs, the colour of the semen may be altered in various ways.

When the semen appears *red, reddish-brown, or brownish-yellow*, the change in colour is generally due to the admixture of blood which comes mostly from the prostatic urethra, owing to the localisation of chronic urethritis in the neighbourhood of the caput gallinaginis; but blood may also enter the urethra with the semen from the vesiculæ seminales. In the former case the seminal stains on linen are not uniform in colour; there are generally separate blood spots in addition to rusty brown seminal spots. In the latter case the spots are all equally coloured, showing a more intimate mixture of blood and semen, such as would take place in the vesiculæ seminales. When the colour is brownish-yellow, it usually depends on the presence of blood and pus in varying proportions.

The commonest cause of bloody seminal emissions is gonorrhœa of the prostatic urethra, and in connection with priapism they are not rare during the fourth week of an acute urethritis.

These symptoms often disappear in a short time; but in some cases they persist for years unless local treatment be adopted. Blood may also appear at a later date when the urethritis has become chronic. Other causes are masturbation or venereal excess, and various disorders of the prostate and vesiculæ seminales. The semen in acute gonorrhœa, having been bloody at first, may gradually become purulent. In such cases the colour of the spots on linen changes by degrees from red to reddish-brown, brownish-yellow, and finally to yellow.

When the semen is *yellow* the colour is usually due to the presence of pus, in which case the stains on linen are yellowish or greenish. The pus in most cases comes from the urethra, and thus is only imperfectly mixed with the semen, the result being that the stains when dry are not uniformly coloured, but are spotted irregularly with pus to a greater or less extent. When, however, the pus is formed in the vesiculæ seminales, it is more intimately mixed with the semen, and the resulting stains are of a uniformly yellow colour. The former are usually seen in chronic catarrh of the neck of the bladder; the latter, which are rarer, occur only in chronic inflammation of the vesiculæ seminales. As in the case of blood, so also when pus is mixed with semen, the commonest cause is gonorrhœa.

A *claret* or *violet* colour of the semen depends on the presence of indigo. The freshly discharged

semen shows only a greyish-violet tint, but when dried the colour becomes very marked, and under the microscope indigo in a crystalline form can be detected. When the red modification of indigo imparts a dark-red or claret colour to the semen, it is often mistaken for blood. The dried stains, however, are equally coloured throughout, which is very rare in the case of blood; and chemical or microscopic examination would at once decide the point.

Although I have not yet seen a specimen of *blue* semen, it is not improbable that such a colour may in rare instances be present. I infer this from the fact that I have in my possession a specimen of bright green semen, the colour of which results from a mixture of indigo and pus.

When indigo is present, the semen usually contains living spermatozoa in normal quantity. Such cases are found among excessively nervous persons, especially after venereal excess or masturbation.

It should also be mentioned that in patients who suffer from jaundice, the semen has a brownish-yellow or beer colour as long as the disease lasts.

Changes in the number of spermatozoa.—It has already been mentioned that the healthy semen of a vigorous man, when examined under the microscope with a moderately high power, should show about 100 living spermatozoa in the field at one time, the great majority of them being in active movement. As regards the relative

number of these elements two pathological variations must be considered, namely, a marked diminution, in their number—Oligozoospermism; and their total absence—Azoospermism.

Oligozoospermism is common in advanced age, but is more common still as an acquired condition

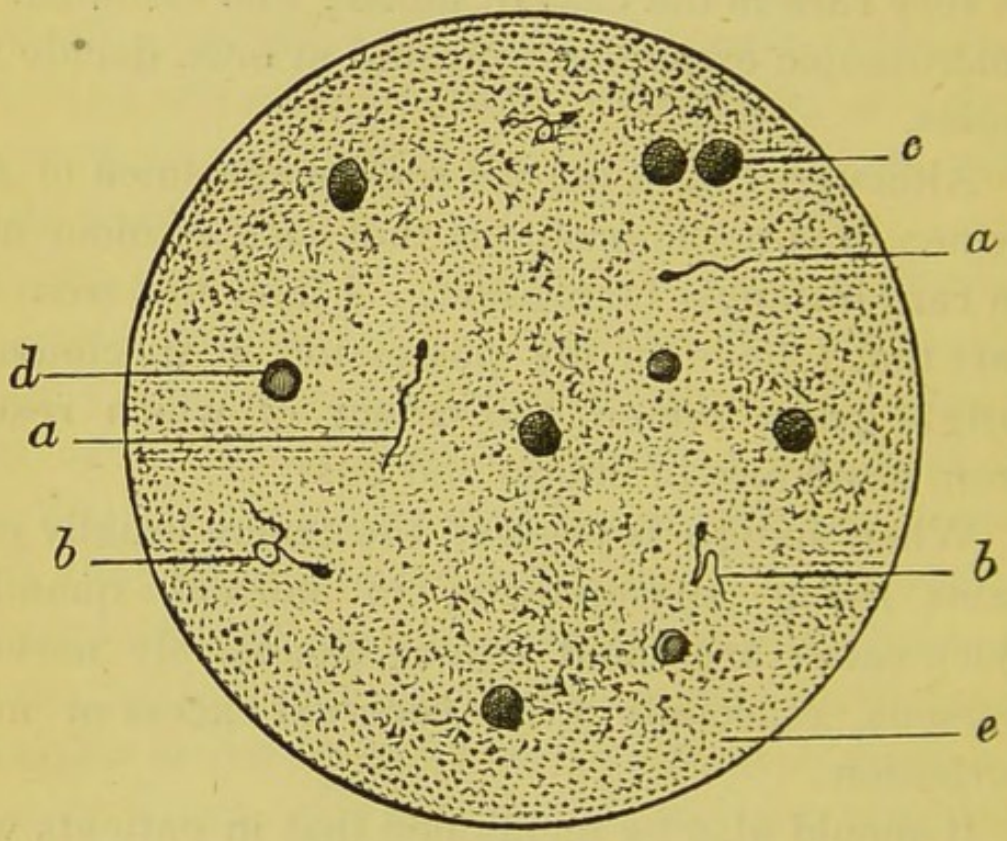

FIG. 2.—THE SEMEN IN OLIGOZOOSPERMISM.

a. Living Spermatozoa. *b*. Dead Spermatozoa. *c*. Pus-corpuscles. *d*. Blood-corpuscles. *e*. Seminal granules. × 300.

in earlier life. In such cases it happens very frequently that the few spermatozoa which are present in the semen, even when examined soon after ejaculation, are motionless and consequently for the most part dead. (Fig. 2). The chief causes

of oligozoospermism are gonorrhœa, inflammation of the epididymis and of the spermatic cord, resulting in partial or complete obstruction of the vas deferens, and consequent impediment to the passage of spermatozoa from the testes to the vesiculæ seminales. In these cases it is not uncommon for the seminal fluid to contain numerous pus corpuscles, molecular detritis, and spermatic crystals.

Besides gonorrhœal epididymitis, tubercular and other tumours of the testis may cause oligozoospermism which often gradually runs on into azoospermism. Much more rarely does the reverse happen, and then only during the first year after epididymitis When three or four years have elapsed, increase in the number of spermatozoa is no longer to be expected.

Oligozoospermism is only to be looked on as causing sterility when the few spermatozoa are motionless—that is dead. If they can clearly be seen to move, the reproductive power is present, though it may be much diminished in degree.

Azoospermism.—Total absence of spermatozoa is quite as common as oligozoospermism, even more so. Azoospermism is constant before puberty, and is sometimes though rarely present in old age. When it occurs in adults it may be either congenital or acquired. When it is congenital the testes are usually small or atrophied; and sometimes there are also other congenital anomalies of the sexual apparatus, for example, cryptorchidism, hypo-

spadias or epispadias; but these last do not always imply azoospermism.[12] Much more frequent is the acquired form, which has generally been preceded by gonorrhœal inflammation of the testes and spermatic cords, with complete obstruction of the latter.[13] In certain cases, but by no means always, the first stage is that of bloody semen which afterwards becomes purulent and, finally, watery and destitute of spermatozoa. While the semen contains blood or pus, it also, as a rule, contains spermatozoa though they may be few in number and are often without movement; but as time goes on they disappear altogether. Azoospermism, however, frequently happens without the semen having been either bloody or purulent. The intensity or frequency of the preceding orchitis bears no relation to the frequency of azoospermism. Men who have had six or eight attacks of double epididymitis may still secrete normal and fertile semen. On the other hand, azoospermism sometimes follows when there has been only trifling pain in the spermatic cord and slight unilateral epididymitis.[14] Nor does the amount of thickening of the epididymis which remains after inflammation always afford conclusive evidence of azoospermism though it is a sign of great significance, and if the thickening affect both organs, the semen ought certainly to be examined. Although the ejaculated fluid in azoospermism consists only of the secretion of the vesiculæ seminales, prostate, and urethral glands, the testicular secretion being absent, the total quantity emitted is not

necessarily diminished, nor is the desire or the power to copulate always impaired. In some cases indeed the sexual appetite is very strong and coitus can be performed daily or even oftener.

The freshly ejaculated seminal fluid also has the same odour and becomes gelatinous in the same way as normal semen, thus proving that these peculiarities are not dependent on the testicular secretion. But if the azoospermic semen is allowed to stand in a test-tube, the lower layer or deposit is very scanty and consists chiefly of epithelium from the seminal passages and urethra, seminal granules, and very often numerous well-formed spermatic crystals. Under the microscope, in a fresh specimen, colloidal masses can not uncommonly be distinguished: these sometimes consist of oval grains, and sometimes show spheroidal concentrically laminated bodies of various forms. In some specimens fatty molecular detritus with small granules of high refractive power can also be seen. These formations originate most probably in the vesiculæ seminales. In the freshly ejaculated semen they often form yellowish coherent masses of the size and shape of sago grains.

The so-called *spermatic crystals* are almost always present in azoospermism. The thinner the seminal fluid, the more quickly and copiously do the crystals appear. In normal semen they are only to be found after many hours, or even only after a day or two; but they can be produced forthwith by drying a drop of semen on an object-glass freely

exposed to the air. Under the microscope, they appear as imperfect colourless rhombic crystals, usually arranged in rosettes or placed one above another.

The chemical composition of these crystals is not quite clear. Böttcher thinks they are albuminous bodies; Schreiner says they consist of a phosphatic salt with an organic base. Others consider them to be crystals of phosphate of magnesia, or of ammonia and magnesia. More recent authors again, have identified them with the so-called Charcot's crystals, and assume that they may be found wherever profuse secretion from mucous glands is going on. Fürbringer asserts that they belong neither to the testicular secretion nor to that of the vesiculæ seminales, but exclusively to the prostatic secretion. The same author is of opinion that the peculiar odour of the semen is due to these crystals. It is clear that they have nothing to do with the proper testicular secretion, for they are most perfectly formed and most abundant in azoospermic semen. Further, as in cases of prostatorrhœa stratified prostatic concretions are found in the secretion, but spermatic crystals only rarely, and as these latter are almost constantly present in azoospermism, the suggestion that they belong, at least in part, to the secretion of the seminal vesicles ought not to be hastily set aside.

The spermatic crystals appear under the microscope as rhombic plates or rhombic prisms. Sometimes two or more prisms combine to form an

irregular cross or a rosette. When imperfectly crystallised they assume a navicular or rhomboidal form with the pointed ends bent in opposite directions. (Fig. 3).

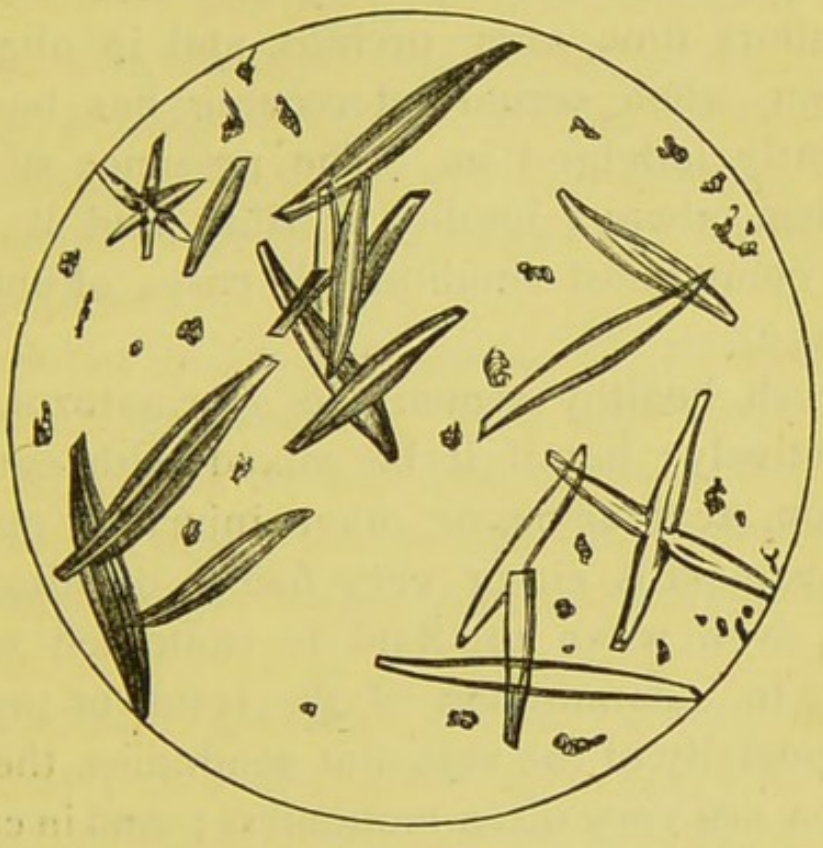

FIG 3.—THE SEMEN IN AZOOSPERMISM.
a. Spermatic Crystals. *b*. Molecular detritus and seminal granules. × 300.

The spermatic crystals are not, as used to be thought, a product of decomposition, for they are found in azoospermism a few hours after the semen has been ejaculated, and even in normal semen they may be obtained at once by drying it on a glass slide. The reason why in normal conditions they only appear on the second or third day, is that in healthy semen the movement of the spermatozoa is too active for crystallisation to take

place; and it is only when the fluid becomes motionless by the death of the spermatozoa that the crystals form.

Azoospermism is in most cases a permanent condition. As a temporary one it occurs only for a short time after orchitis, and in oligozoospermism when sexual intercourse has been too frequently indulged in. The presence of azoospermism always implies sterility, and it is one of the commonest conditions in cases of unfruitful marriage.

In fresh healthy semen the spermatozoa move very actively; but if it be mixed with catarrhal secretion, acid urine, or other injurious material the movement is either very feeble or altogether absent, even when the fluid is examined without delay. In inflammation of the testes or prostate, and especially of the vesiculæ seminales, the spermatozoa are very often motionless; and in chronic catarrh of the seminal vesicles the majority of the spermatozoa usually, and sometimes all of them are in the same condition. The catarrhal secretion, although alkaline, appears to have the effect of paralysing the spermatozoa, which, moreover, are usually diminished in number.

Semen which contains only motionless spermatozoa is infertile. Whether movement can be restored in the female genital passages is not certainly known. In several cases of unfruitful marriage I have found the spermatozoa without movement; and I am the more inclined to attri-

bute the sterility in these cases to this abnormal condition of the semen that Professor C. Braun could discover nothing in the state of the wives to account for it.

If the semen, besides numerous motionless spermatozoa, contains also some living ones, the condition is analagous to that of oligozoospermism, that is, though not one of absolute sterility, the occurrence of impregnation might be considered a lucky accident.

Deformities of the spermatozoa.—Of these must be mentioned spermatozoa with (*a*) large round dropsical heads, (*b*) with two heads, and (*c*) with two tails. These abnormalities are rare and only affect single specimens among others which are normal.

Pathological ingredients of the semen.—Besides blood- and pus-corpuscles, and epithelium, crystalline indigo in considerable quantity is sometimes met with under the microscope. It appears in the form of bright blue leaflets and flakes, and is not very rare in the semen of men of highly nervous temperament.

The secretion of the prostate and of the accessory glands of the urethra which is discharged into that canal partly with the semen and partly before it, appears to serve various purposes. First, it serves to dilute the semen, thereby facilitating the freer movement of the spermatozoa; secondly, it probably serves to prepare the urethra for the passage of the semen. The urethra as far back as

the veru montanum is obviously a canal which belongs equally to the urinary and the sexual organs. But a canal which serves usually for the outflow of acid urine cannot, without some special preparation, appropriately serve the same purpose for the semen which is alkaline. The urethral epithelium, especially in the wider portions of the canal, the region of the bulb for example, is kept bathed with a residuum of acid urine, which would be injurious to the spermatozoa. In order then to neutralise the acid epithelial surface, and thus prepare it for the semen, the secretion of the accessory glands of the urethra is poured out beforehand, and coats the urethral walls with the clear viscid transparent fluid, a few drops of which appear at the meatus when erection of the penis is complete.

CHAPTER II.

Treatment of Sterility.

The treatment of sterility in the male subject is only rarely successful. When blood or pus is mixed with the semen, it is generally due to some pathological condition of the veru montanum or of the prostatic urethra. In most cases of this kind the blood or pus becomes mixed with the semen only at the moment of ejaculation, and when this is the case, cauterisation of the prostatic urethra nearly always effects a cure. For this purpose, I use a five per cent. solution of nitrate of silver, which I inject by means of the instruments shown in fig. 4. A quantity equal to from three to five of the divisions marked on the syringe is injected at one time.

After three or four applications of the solution at intervals of three days, the semen will be found to have returned to its normal condition. The nitrate of silver may also be used in the form of urethral suppositories introduced by means of Dittel's porte-remède.

When blood and pus come from the seminal vesicles, and appear intimately and uniformly mixed with the semen—fortunately a rare occurrence—cauterisation is not of much benefit.

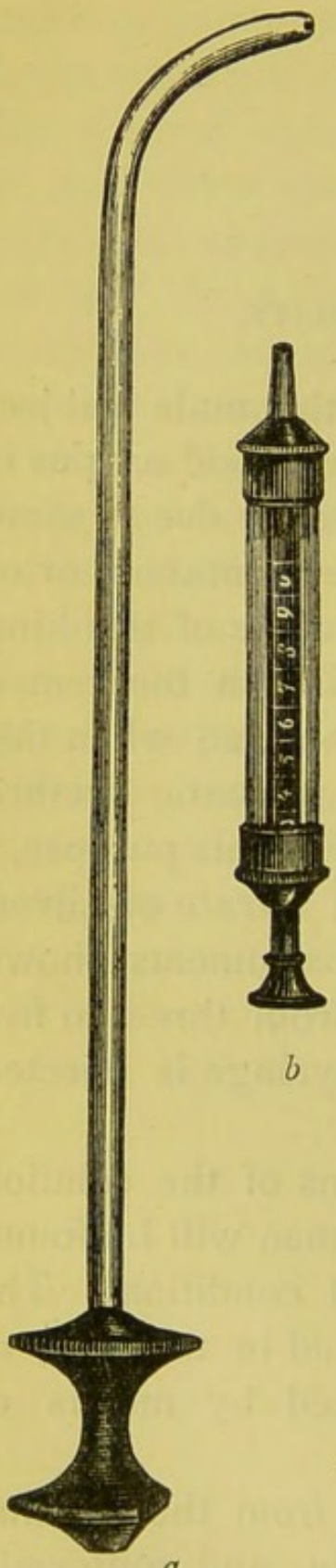

FIG. 4.—*a*. Ultzmann's catheter with capillary bore. *b*. Syringe. $\frac{3}{4}$ actual size.

The diagnosis of the source from which the blood and pus proceed may usually be made by comparison of the microscopic appearances of the urine and of the semen. That is to say, if the urinary deposit contains neither blood nor pus corpuscles, and if these be present in the ejaculated semen, it may be taken for granted that they come from the seminal vesicles.

In oligozoospermism the cause must be looked for either in a diminished power of secretion by the testes, or in stenosis of the vasa deferentia which is especially liable to happen after epididymitis and inflammation of the spermatic cord. With regard to the latter condition there can be no question of operative measures because of the narrowness of the lumen of the vas deferens; the only other plan of treatment is to try to stimulate the testes to increased secretion. This can be best accomplished by the direct application of faradism; for if the testes are capable of forming a larger

quantity of spermatozoa, this power is sometimes brought into action by means of the induced current, in which case the increased seminal secretion acts as a dilating *vis a tergo* on the narrowed vasa deferentia, and thus the number of spermatozoa in the semen may be lastingly augmented.

In azoospermism the prospect is not so favourable, for this condition usually depends either on complete atrophy of the testes or on impermeability of the vasa deferentia. In the former case treatment of any kind is of no avail; in the latter faradisation of the testes may be tried, and if the obstruction happens to be caused by mere apposition of the walls of the vasa deferentia, and not by adhesion, cure may result in a few rare instances. If, however, there be complete adhesion, treatment will be useless.

As regards azoospermism generally, success in treatment can only be counted on when the affection has not lasted more than a year, reckoned from a preceding attack of orchitis. If the azoospermism is of longer duration, nothing more is to be expected from treatment; for even if the permeability of the vasa deferentia could be restored atrophy of the testes would have been induced by so long a period of functional inactivity. If the epididymis or spermatic cord feel thickened and hard, inunctions and suitable hydropathic treatment should be resorted to with the view of aiding resorption.[15]

CHAPTER III.

Impotence.

By Impotence is meant inability to perform the sexual act with the penis in a state of erection. This incapacity depends sometimes on the fact that erection does not occur at all at the time of intercourse: sometimes, however, erection occurs, but does not last long enough for the act to be completed. In the latter case premature ejaculation is usually the cause of the subsidence of erection. In order that the question of impotence may be properly understood, it will be necessary to begin by describing the mechanism of erection, and also that of ejaculation.

Mechanism of erection.—According to Kölliker and Kohlrausch, erection of the penis is brought about in the following way:—Under the influence of the nervi erigentes the organic muscular fibres of the cavernous bodies relax, and thus the cavernous spaces widen, and are then filled with blood by the helicine arteries which open into them. The blood is returned partly by veins which open into the dorsal vein of the penis, and partly by veins which emerge from the corpora cavernosa through gaps in the cortical reticular tissue on its inferior surface. When the corpora cavernosa are fully

distended with blood a certain degree of compression is exerted on the efferent veins, and the blood is thus prevented from flowing out again. This prevention of outflow is also materially aided by certain muscles. Along the sub-pubic portion of the urethra lies the bulbo-cavernosus muscle which arises posteriorly from the central tendinous point of the perinæum in common with the transversus perinæi and sphincter ani muscles. The fibres of the bulbo-cavernosus diverge in a feather-like manner on each side, and end anteriorly in the shape of a fork, the two extremities of which terminate above in an aponeurosis which blends on the dorsum penis with the tendons of the ischio-cavernosi muscles (Linhart). When this muscular apparatus contracts, the penis is constricted in the region of the symphysis, and regurgitation of blood from the corpora cavernosa is thus prevented. At the same time the penis is raised, that is becomes erect, probably by the action of the ischio-cavernosi muscles.

If now the relaxation of the corpora cavernosa, or in other words the action of the nervi erigentes, be imperfect, a quantity of blood sufficient to exercise the requisite pressure on the efferent veins cannot enter the cavernous tissue, and consequently the penis cannot become rigid. Further, if the constriction exerted on the root of the penis by the muscles already mentioned be insufficient, erection will be either incomplete, or it will not last long enough for the completion of the sexual act. Some

men whose powers are weak, in order to increase the rigidity of the penis, apply round the root of the organ an india-rubber ring which thus acts as an obstacle to the outflow of blood.

The mechanism of erection is essentially under the control of the nervous system. According to Eckhard erection can be produced in dogs by electrical stimulation of the brain or spinal cord. In man too, erection may originate in the brain or spinal cord, under the influence of sexual thoughts for instance, and in certain forms of tabes dorsalis. But erection may also be produced by peripheral stimulation of the genital organs. Thus, when the bladder is full, erection usually occurs more easily and lasts longer than when the bladder is empty. Again, in the supine position during sleep, the pressure of the intestines on the efferent blood vessels is sufficient to cause vigorous erections, and the same result often follows when the seminal vesicles are distended, as in the case of prolonged continence. Constipation, lithiasis, affections of the rectum, and still more of the prostate are often accompanied by frequent erections, while prostatitis sometimes causes painful priapism. Lastly, irritation of the penis and testes, as in masturbation, also provokes erection. There can be no doubt, therefore, that peripheral irritation of the sexual apparatus, more especially of the prostate, is capable of exciting erection in a reflex manner.

As regards erection produced by peripheral nerve irritation, Goltz has found by experiments on dogs

that it occurs more promptly and vigorously when the lumbar portion of the spinal cord is separated from the remainder. Whence he concludes that there are inhibitory nerves which come from the brain, and which to a certain extent control the phenomena of erection. The existence of such inhibitory nerves serves to explain the phenomena of the psychical form of impotence which will be considered later on.

Mechanism of ejaculation.—In normal circumstances the ejaculation of semen occurs only when the penis is in a state of erection. When the corpora cavernosa become rigid the caput gallinaginis swells also, and thus blocks the passage backwards towards the bladder, while at the same time the orifices of the ejaculatory ducts are directed forwards, and the urethral walls are coated with the deposit provided by the sexual apparatus. That the passage to the bladder is obstructed during erection by the turgid caput gallinaginis, is shown by the fact that while the penis is erect no urine can be passed, although the semen flows out easily. The pain also which is felt in the perinæum during ejaculation in cases of narrow stricture points to the fact that the semen is prevented from passing back into the bladder.

Before emission takes place the urethral glands begin to secrete a clear viscid fluid, the probable use of which has already been mentioned. As the moment of ejaculation approaches, the sexual excitement becomes more and more intense, and

with a spasmodic sensation in the perinæum the seminal vesicles begin to empty themselves; at the same time also the prostatic fluid is poured out. As the semen escapes gradually through the narrow ejaculatory ducts, being unable to flow backwards on account of the swollen caput gallinaginis, it passes forwards and collects in the bulbous portion of the urethra. When the quantity here collected is sufficient to cause distension, reflex spasmodic contractions of the bulbo-cavernosus muscle occur, and the semen is shot out of the urethra.

That the semen during coitus is not ejaculated directly from the seminal vesicles or testes seems clear for anatomical reasons, especially the narrowness of the ejaculatory ducts. Further, although in frequently repeated coitus the percentage of spermatozoa in the discharged semen gets less and less, a sufficient number of these bodies could not travel quickly enough from the testes to the seminal vesicles and urethra by the time ejaculation would occur. It appears, therefore, that the bulbous urethra during coitus serves as a temporary reservoir for the semen, and that it is the function of the bulbo-cavernosus muscle to eject it therefrom. When the action of this muscle is impaired, as is usually the case in the paralytic form of impotence, the semen is no longer forcibly ejaculated, but runs away slowly from the meatus as from a flaccid tube.

The different forms of impotence may be divided

as follows:—1. Organic impotence; 2. Psychical and relative impotence; 3. Impotence from irritable weakness; 4. Paralytic impotence.

Organic impotence is that form in which the inability to copulate depends on organic malformation or mutilation of the penis, or on some pathological condition of the immediately neighbouring parts, for example, hypospadias, epispadias, absence or abnormal smallness of the penis, elephantiasis and tumours of the penis, deviation and bending of the penis when erect, from partial destruction of the erectile tissue through injury or inflammation, large irreducible hernia, scrotal tumours or other swellings, and the like. General obesity also, when the belly is very pendulous, may render coitus impracticable. In organic impotence the sexual passion may be strongly developed, and ejaculation may occur in a normal manner, intromission only being impossible through one or other of the causes above mentioned. This form of impotence is usually absolute, and only amenable to treatment in exceptional instances.

An interesting case of this kind which I have published elsewhere may be here briefly related. Adolf J——, aged 41, had been baptised by the name of Adolfine, having been thought to be a female at birth by reason of an extreme degree of hypospadias. He wore woman's dress until he was 20 years old; at this time, as the beard began to grow and the voice to change, a medical exa-

mination was made and his true sex discovered. He then assumed male attire and changed his name to Adolf. On examination, the following condition was found. The scrotum was small and divided into two halves, the right one containing a small testis and the left being empty. The pendulous and sub-pubic portions of the urethra were wanting, and the meatus was situated at the lower angle of the scrotal cleft. The penis was small and firmly adherent to the right half of the scrotum, and when the thighs were separated the general appearance of the parts resembled that of the vestibule in the female. The glans penis was adherent to the upper wall of the urethra. The man had strong sexual feelings and was married. He satisfied his desires by pressing his genitals against those of his wife until ejaculation took place. By means of an operation I succeeded in freeing the penis so that it became capable of partial intromission, to the great joy of the patient.

Psychical impotence.—This form of impotence, which is usually of a temporary kind, occurs chiefly in nervous persons who have either married late in life, or have been much addicted to masturbation in their youth, or have suffered from gonorrhœal prostatitis, cystitis, or inflammation of the testes. In the first class of cases the impotence usually depends on want of self-confidence. Such men are thrown by marriage into a state of great nervous excitement and fear lest they should be unable to perform satisfactorily their marital

duties. In consequence of this nervous disturbance the influence of the cerebral inhibitory nerves becomes intensified, with the result that erection does not occur at the time it is desired.

The influence of fear and anxiety on the process of erection may be well illustrated by simply passing a sound on such a patient. As soon as he prepares himself and lies down, the penis begins to shrink and can be seen to get smaller by degrees, and sometimes even to writhe like a worm. The corpora cavernosa become smaller and harder, so that the diameter of the body of the penis is less than that of the glans. To the touch the organ feels as hard as cartilage, while the skin is thrown into wrinkles in consequence of spasmodic contraction of the muscular tissue of the corpora cavernosa. These phenomena, which in this case are due to intensified action of the inhibitory nerves set up by the fear of catheterism, may be produced in exactly the same way by psychical influences of other kinds, and thus for the time being the patient is impotent.

In the case of masturbation another influence comes into play. Men who are unaccustomed to ordinary sexual intercourse, and those who resort to abnormal means for the gratification of their sexual appetite, do not succeed well in marriage, though they may be still capable of intercourse with other women. One failure in married life disconcerts these patients so much that, on repeated attempts being made, the power of erection fails

altogether when it is wanted, though vigorous erections may occur at other times.

It is also worthy of note that some of these patients, though previously quite potent, become temporarily impotent after an attack of gonorrhœa, especially if it be complicated with cystitis, prostatitis or epididymitis. In such cases the gonorrhœal affection seems to have a paralysing effect on the nerves of the prostate.

The prostate contains in that part of its substance nearest the urethra, as well as in its cortical layers, powerful nerve plexuses with disseminated ganglia, and to this apparatus belongs, besides other functions, the power of exciting erection in a reflex manner. Thus, the simple pressure of a metal sound not infrequently causes complete erection, and the application of caustics or astringents to the prostatic urethra acts in a similar way. It is well known also that tumours of the prostate, stone, and more particularly inflammatory prostatic affections, are frequently accompanied by painful erections or priapism, quite independently of the patient's will. Thus, there can hardly be a doubt that reflex erections may be set in action from the prostate. These reflexes depend on conduction by nerves, and it is by alteration of these nerves in some way, through inflammation of the prostate for example, that the occurrence of impotence after gonorrhœa may be explained.

All the morbid processes above mentioned give

rise to impotence which for the most part is only of a temporary nature. Psychical influences of the most various kinds always form an element in the case, and it is only after these have been removed that the patient regains sexual power. I know of cases in which, although the wife remained a virgin a year and even two years after marriage, the husband's impotence gradually disappeared and children were afterwards born.

The sexual organs in those who suffer from psychical impotence are usually normal, though in some cases azoospermism is present. These patients when alone in bed have perfect erections, which circumstance distinguishes this from the paralytic form of impotence; but as soon as they attempt intercourse, which they usually do full of doubts and fears, either erection does not occur at all or only in a very imperfect manner. The *prognosis* of psychical impotence is, as a rule, favourable.

Relative psychical impotence is that form in which the patient is impotent only with certain women, and if, as is not very rarely the case, the woman in question happens to be the patient's wife, the affection is a particularly unfortunate one. In cases of this kind, a feeling of dislike, either mutual or on the side of husband or wife—usually the latter—plays the chief rôle. In marriages which have been contracted from motives of expediency and not from love or mutual inclination, this state of things is not very rare.

There are some men who are ready for sexual intercourse whenever they get the chance, but there are also a large number who are only capable of coitus when the woman surrenders herself with complaisance. A large contingent of such cases is furnished by men who are endowed with sensitive nerves, the so-called book-men and scholars; and it not uncommonly happens that such intellectually powerful men, partly perhaps from natural inaptitude, play anything but a satisfactory part in regard to sexual matters.

Impotence from irritable weakness.—Impotence of this kind is always attended by premature ejaculation. A man proceeds to sexual intercourse with the penis in a state of erection, but when he attempts to carry out his wishes, and before he has been able to effect complete intromission, ejaculation occurs with consequent subsidence of the erection. The affection is very common among those who attempt coitus in a highly excited state, as well as among those who have been addicted to masturbation and suffer from frequent nocturnal emissions. In such subjects reflex action is much too quickly evoked.

In many men who suffer from this variety of impotence, intercourse becomes impossible, because premature ejaculation follows every attempt. In slight cases, however, though the first attempt fails, a second or third may be crowned with success.

When such patients are examined with the

sound, the urethra, especially the prostatic portion, is found to be exceedingly sensitive, and they shriek and behave like madmen as the instrument passes the prostate. This hyperæsthesia of the prostate explains the too rapid reflex action and consequent premature ejaculation. The *prognosis* of this form of impotence is favourable; not infrequently it disappears of itself.

Paralytic impotence.—This is distinguished from other forms of impotence by the fact that erection no longer occurs either in coitus or at any other time. In the slighter cases indeed, a condition of semi-erection is still possible, so that coitus may be practicable provided the vagina be capacious, but not infrequently the erection subsides altogether on intromission. Ejaculation also is abnormal; it either does not occur at all or only very slowly. The semen, moreover, is not forcibly ejected as in health, but drips away from the meatus. This state of things is not rare as a symptom in some chronic diseases, such as diabetes mellitus, morphinism, certain lesions of the brain and spinal cord, and in cachexia of various kinds. This form of impotence depends for the most part on paralysis of the erection centre in the lumbar portion of the spinal cord, and is not uncommonly associated with spermatorrhœa.

The genital organs are wrinkled and flabby, and the skin of the penis and scrotum is only slightly sensitive, sometimes even completely anæsthetic. The urethra also is much less sensi-

tive than normal, and a sound passes easily and painlessly to the bladder. Not infrequently the skin of the thighs and in the neighbourhood of the genitals is much more sensitive to electrical stimulation than that of the penis and scrotum.

The proximate cause of this form of impotence is not always clear. A large proportion of the patients are masturbators or debauchees who still persist in their evil courses.

The *prognosis* is doubtful. In young men who have not entirely lost the power of erection, improvement and even cure may be obtained. In older patients, however, recovery is hardly to be expected.

CHAPTER IV.

Treatment of Impotence.

The treatment of impotence varies according to the form.

In *organic* impotence the remedy is mostly a surgical one. In hypospadias and epispadias, good can sometimes be effected by plastic operations so far as to render the organ movable, and capable of intromission. In tumours and elephantiasis of the penis partial or complete removal will be necessary. In infiltration of the corpora cavernosa with angular deformity on erection, treatment should be directed to procuring absorption of the infiltrated material; if syphilis be the cause, the administration of iodine and mercury will be successful. In cavernitis following injury, or occurring in advanced age, though repair is very unlikely, iodine, the local application of resorbents, pressure by means of adhesive plaster, and warm bathing might be tried. Large irreducible herniæ and other scrotal swellings, especially hydrocele, would have to be submitted to operation.

In *psychical* impotence recovery not infrequently takes place spontaneously on the removal of the psychical factor, whatever that may be. Thus,

men sometimes become suddenly impotent on the death of some dear relation or friend, or on some unexpected loss of fortune or property. In these cases, pain grief and misfortune have a paralysing effect on the erection centres; but as in the course of time the patient becomes easier in his mind, the impotence disappears. It is in such circumstances as these that the friendly ministration of a medical man who enjoys the confidence of his patient is of great benefit.

Most frequently, however, the psychical form of impotence is seen in young men of anxious disposition, who have been addicted to masturbation or have had obstinate gonorrhœal trouble. Nervous individuals and those who have read books in which the consequences of sexual excess are painted in the blackest colours, form the majority of those who suffer in this way. Quinine, iron, cold water bathing, residence in the country, especially mountainous country, and travelling form the basis of general treatment; but local measures are much more effective. The power of erection in these cases is by no means lost; the disorder is merely functional and consists in this, that the erections always occur at the wrong time and never when they are wished for.

The *local treatment* must therefore be directed to causing erections by the use of instruments and local applications, at a time when the patient has no idea that erection is at all likely to take place. Its occurrence in such an unexpected manner

strengthens the patient's confidence in his own capacity to so great an extent that he very soon regains sexual power.

Seeing that, as has already been explained, erection may be excited by irritation of the prostate, this organ forms the chief point of attack in the treatment of impotence by instruments. The following methods are worthy of recommendation:—

The passage of sounds.—This mode of treatment consists in the daily introduction into the bladder of heavy metal sounds of medium curve, beginning usually with No. 20 (Charrière) and gradually increasing the size up to No. 30. The patient should lie in the horizontal position, and the instrument should be retained for from five to ten minutes. When the sound has reached the bladder it is advisable to make downward pressure on the handle by means of a towel or in some other way, in order to increase the amount of pressure and tension in the prostatic portion of the urethra. The effect of this not infrequently is to give rise to vigorous erections after a few days' treatment, sometimes even when the instrument has only been in the urethra for a few minutes.

The cool sound or psychrophor.—This instrument resembles a double-current metallic catheter without any opening at its vesical end, and branching out into two extremities at the other end. India-rubber tubing is fitted on to each of these branches; one forming the in-flow and the other the

out-flow tube. The end of the in-flow tube is placed in a vessel of cold water elevated above the patient, and the end of the out-flow tube in an empty vessel on the floor. When the sound has been passed into the bladder, the patient being in the horizontal position, the current is started by suction applied to the free end of the out-flow tube by means of a syringe, and circulation then goes on through the two halves of the sound. Thus, the effects of metallic pressure and of cold are brought to bear on the prostate at the same time. The water may usually be used as it comes from the tap, that is at about a temperature of 9-10° R. (53-55° F.); but if the patient cannot bear this, the temperature may be raised to 14-16° R. (64-68° F.). Sometimes warmth acts better than cold; and in cases where the latter has been unsuccessful, water of a temperature of 30° R, (100° F.) and upwards may be tried. Thermic stimulation of the prostatic urethra by means of the psychrophor is one of the best means of producing erection.

The application of astringents to the prostatic urethra acts in similar manner to the methods already described in exciting erection. Simple irrigation with weak solutions of zinc, alum, and other substances not unfrequently produces erection, but astringents are better used in the form of small suppositories which are introduced into the prostatic urethra by means of Dittel's *porte-remède*. The following prescription is a very good one for this purpose:—Pure Tannic acid, 0·50 (about 8 grains);

Oil of Theobroma, sufficient to make five suppositories, each 2 centimetres long.

At first only half a suppository, but afterwards a whole one may be used. Dittel's *porte-remède* consists of a catheter with a short curve, and an open end which is closed during introduction by means of an obturator. When the instrument has reached the prostatic urethra the obturator is withdrawn; the suppository is then placed within the tube, and pushed onwards by the obturator into the urethra. The patient should not pass water for about half an hour. On micturition there is usually a sensation of pain and some degree of erection. The frequency and strength of the erections gradually increase under the use of the suppositories daily or every other day, and they should be continued until the erections are of normal vigour and duration. The application of a five per cent. solution of nitrate of silver by means of the instruments shown in fig. 4, acts in a similar manner.

In impotence with irritable weakness which is associated with premature ejaculation, the use of the psychrophor, and mild cauterisation of the caput gallinaginis with the instruments already mentioned, are especially indicated, together with a suitable cold water cure.

In the *paralytic form of impotence* local treatment is not very successful. Still in some cases good may be done by the passage of sounds, the psychrophor, and tannin suppositories. The patient should be enjoined to abstain most strictly from any attempt

at intercourse, and sexual excitement of every kind must be avoided. The cold water cure in combination with electricity may also be of service.

When the semen is not forcibly ejected but only dribbles away, faradisation of the bulbo-cavernosus muscle is indicated. For this purpose one rheophor is to be introduced within the rectum, and the other applied to the raphé of the perinæum. In healthy men the perinæum bulges forward from the muscular contraction induced by the electric current, while in the paralytic form of impotence this only occurs to a very slight degree, or not at all. Faradisation should be continued until the muscular contraction is clearly perceptible; in many cases, however, this method of treatment does not succeed.

NOTES ON STERILITY.

By the Translator.

1. *The comparative frequency of sterility in men.*—The proportion of unfruitful marriages in which the husband is at fault is probably much larger than it was formerly believed to be. Thus, of 192 cases in which both husband and wife were examined, collected from various sources by Dr. S. W. Gross, of Philadelphia (*On Impotence, Sterility, etc.*, p. 87), the husband was at fault in 33. Eight of the cases were examined by Dr. Gross himself, and in one of them the husband was deficient. In the article on "Sterility in the Female" in Quain's *Dictionary of Medicine*, Professor A. R. Simpson estimates the proportion of childless marriages in the general community to be about 1 in 8 or 8·5; and among members of the peerage 1 in 6·11. He also states that the cases where an azoic semen is ejaculated are for the most part altogether overlooked.

Quite recently M. Pajot, in a lecture on "The Obstacles to Fecundation in the Human Female," (translated in the *Provincial Medical Journal*, Oct., 1886, p. 468) has made some further observations on this subject. He states that though he formerly taught that of 100 sterile marriages 99 were due

to the wife, he found eight or ten years ago that 7 in 80 were due to the husband. While at the present time, judging from the notes of 400 cases in which he has examined the semen, he is able to say that of 100 sterile unions of from two to fourteen years duration, the husband was in fault in from fifteen to twenty cases. A still larger percentage is given by Kehrer (quoted by Müller: Billroth and Luecke's *Handbuch der Frauenkrankheiten*, 2 Aufl. Bd. i., p. 425) who, in 40 cases* of unfruitful marriage where the wife showed no abnormality, found spermatozoa absent from the seminal fluid in 14 of the husbands. These men were all potent as regards coitus, and in only eight of them was any preceding attack of gonorrhœa acknowledged.

Dr. Matthews Duncan, who gives the proportion of sterile marriages as about one in ten, affirms that in the great majority of cases no impediment can be discovered in either sex (*Lancet*, Feb. 24th, 1883).

In connection with this subject may be mentioned the results of some observations made by Dr. Busch at the Pathological Institute of Munich. Busch examined, without any selection, the bodies of 100 men brought consecutively to the dead-house. Of seven cases of sudden death due to accident or suicide, many spermatozoa were found in four and few in three. Of 14 cases in which

* These 40 cases as well as Pajot's 80 are included in those collected by Dr. Gross.

death had been caused by acute disease of probably not more than four weeks' duration, there were many spermatozoa in nine; few in three; and none in two. Of 42 cases of death from phthisis there were many spermatozoa in 8; few in 20; and none in 14. Lastly, of 37 cases in which death was caused by various other chronic diseases, many spermatozoa were present in 13; few in 13; and none at all in 11. In all cases the autopsy was made in from 24 to 36 hours after death, and included an examination of the testes epididymes and vasa deferentia, and in some instances of the contents of the vesiculæ seminales also (*Zeitschrift für Biologie*, Bd. xviii., 1882, p. 496).

2. *The quantity of semen.*—The difficulty of forming a correct estimate of the normal quantity of semen ejaculated at one time, is well shown by the great difference between the calculations made by different observers. For example, the average quantity is given by Liégeois (*Medical Times and Gazette*, vol. ii., 1869, p. 511), as from one to three grammes; by Austin Flint (*Text-book of Human Physiology*, 1876, p. 884), as half a drachm to one drachm; by Mantegazza, quoted by Robin (*Dict. Encyc. des Sci. Méd.*, Art. *Sperme*), as 0·75 to 6 cubic centimetres; and by Duval (*Nouv. Dict. de Méd. et de Chirurg. Pratiques*, Art. *Spermatozoïde et Sperme*), as from one to eight grammes. Thus, Professor Ultzmann's estimate of 10 to 15 grammes is seen to be far above all the others. Liégeois indeed

(*loc. cit.*) speaks incidentally of three grammes as abundant, and of 8 grammes as enormous. So that the quantity (2 to 5 grammes) considered pathologically small by Ultzmann, and described by him as oligospermism (p. 14) would, according to Liégeois, be not only within but rather beyond the normal standard.

It must of course be remembered that the quantity may vary greatly in the same person at different times according to circumstances, especially as regards moderation or excess in sexual indulgence.

3. *Temporary absence and variation of spermatozoa.*— The spermatozoa may be absent for a time after excessive sexual indulgence. Liégeois (*loc. cit.*, p. 247) examined the semen of a student after he had had sexual intercourse three or four times daily for ten successive days, and no spermatozoa could be seen. But when the semen was again examined after three weeks abstinence, spermatozoa were found in enormous quantity.

The variations that may occur in the spermatozoa, both as regards number and size, are well illustrated by a series of observations recorded by Casper (*Forensic Med.*, Syd. Soc. Transl., vol. iii., p. 292) on the semen of a vigorous man sixty years old. On one occasion on the third day after coitus, there were a large number of very small spermatozoa, while on the fourth day after renewed coitus, they were few and small; after a pause of two days there were none; after a pause of

one day there were no spermatozoa and the semen was watery. At another time, on the fifth day after coitus, the spermatozoa were very numerous. At another time, after a pause of six days, they were few in number but of large size. Four months later, and seventy-two hours after coitus, the spermatozoa were comparatively very small; while on another occasion on the third day after intercourse, they were innumerable.

These observations show that an opinion as to the quality of the semen should only be given after repeated examination and under known conditions.

4. *Spermatozoa in old age.*—In healthy men the spermatozoa continue to be formed until a late period of life. Thus, Curling states (*Diseases of the Testis*, 4th edit., p. 431) that he has several times detected them in the testes of men upwards of seventy years of age, and once in those of a tailor who died at the age of eighty-seven. Duplay also discovered spermatozoa in the testes of nine octogenarians (*Arch. Gén. de Méd.*, ser. iv., tom. xxx., p. 385); while according to Casper (*op. cit.*, p. 291), Dr. Abel observed them in a man of ninety-six.

But though the semen may contain spermatozoa, it would seem that they do not always possess fertilising power. Pajot (*loc. cit.*) considers that Duplay made a great mistake in concluding that old men are capable of procreation at any age. He agrees with Duplay that spermatozoa are present in old age, but affirms that they are very

different from those found in healthy young men; they are one-half shorter, more slender, and much less active, and though under the microscope they can be seen to oscillate from side to side, they do not move across the field. Pajot says that he knows such spermatozoa cannot impregnate, because he has often met with them in young married men with young and healthy wives, but without children. These old-young men had had orchitis on one side, or some severe illness, or had committed sexual excess.

5. *Duration of the movements of spermatozoa outside the body.*—The spermatozoa may continue in active movement long after ejaculation, especially if, according to Godard (*Etudes sur la Monorchidie et la Cryptorchidie*, p. 34), the seminal fluid be preserved in a well closed vessel. This observer also states that he has often seen the spermatozoa moving forty-eight hours, once seventy-two and once eighty-two hours, after ejaculation.

I have myself observed spermatozoa in active motion sixty hours after ejaculation, in a specimen of semen kept in a glass tube with a cork placed loosely in its orifice, and not protected from light or cold, in the month of April. In another specimen of the same semen examined after eighty-four hours, one spermatozoon was seen in active motion and others moving slowly across the field.

6. *Rate of movement and size of spermatozoa.*—The

rate of movement is given by Landois as from 0·05 to 0·5 mm. per second. It is most rapid immediately after the fluid is shed, but gradually becomes feeble (*Text-Book of Human Physiology*, Translated by Stirling, 2nd edit., vol. ii., 1886, p. 1167). The length of a spermatozoon is given by the same observer as 50 μ. According to Flint (*op. cit.*, p. 885) the head is about $\frac{1}{5000}$ of an inch long, $\frac{1}{8000}$ of an inch broad, and $\frac{1}{25000}$ of an inch thick, while the length of the tail is about $\frac{1}{500}$ of an inch.

7. *Physiological escape of spermatozoa.*—The following are some of the physiological conditions, other than during the sexual orgasm, in which spermatozoa escape from the body. First, as regards their presence in the urine. These elements may always be found, and often in considerable number, in the urine first passed after a seminal emission, however caused. Afterwards they are not, as a rule, to be found until after the lapse of a certain period of continence. But in the absence of any emission of semen for some time—about four or five weeks according to Robin—it may then happen, according to the same observer, that a slight overflow of the contents of the vesiculæ seminales takes place, and thus a small number of spermatozoa escape into the urethra and are washed out by the next stream of urine. If at the same time the patient happen to be suffering from gleet, the spermatozoa may collect

in the mucous shreds of discharge which are found in the urine in such circumstances. I have repeatedly found spermatozoa embedded in these shreds in cases of chronic urethritis, and that too in cases where there was no complaint or sign of disordered sexual function, nor any evidence of a diseased condition of the prostate. Robin states that according to the presence or absence of spermatozoa in such shreds we may learn the duration of abstinence. This, however, will obviously vary in different persons, both according to their sexual constitution, and also according to the influence of sexual excitement and other circumstances. It is worthy of note that Robin has known these urethral shreds containing spermatozoa to be mistaken for casts of the seminiferous tubules.

The mere presence of the spermatozoa themselves does not give rise to any change in the naked eye appearance of the urine. But when the other constituents of the seminal fluid are present, as for instance in the urine passed shortly after emission, the semen shows itself at once in the urine glass as a whitish stringy cloud near the surface of the urine, which slowly and gradually sinks to the bottom. Dispersed through the cloud are numerous white specks or flakes; these, however, are not due to the presence of spermatozoa. Some time ago I had the opportunity of comparing two samples of urine, one containing semen and the other the fluid from a case of "prostatorrhœa"

in which no spermatozoa could be found; yet the two specimens had exactly the same flocculent appearance to the unaided eye.

Thus, it appears that there are no naked eye characters by which the presence of spermatozoa can be recognised. Further, it need hardly be added that their occasional presence in the urine is not any evidence of disease.

Another fluid in which spermatozoa are sometimes present, is the viscid transparent secretion of the urethral glands which escapes from the meatus, more especially in nervous men, during or after prolonged or intense sexual excitement without gratification (the *Urethrorrhœa ex libidine* of some writers). The presence or absence of spermatozoa here again would appear, as far as I am able to judge from some examinations I have made of the fluid, to depend on the same conditions as their presence in the urine, that is, on the length of time that has elapsed since the last seminal emission, etc. The appearance of this secretion, by the way, is a phenomenon which often alarms the patient very much, and is one of the many troubles he calls "Spermatorrhœa."

8. *Congenital Aspermatism.*—The following case, the only one of the kind I have seen, seems to be analogous to those related by Dr. Ultzmann. A gentlemen, aged 20, came to me in the summer of 1884 with the complaint that he had never had a seminal emission. He stated that he had never

attempted sexual intercourse, but had occasionally practised masturbation without any emission taking place. Sexual desire was present, and he had erotic dreams accompanied by erection once or twice a fortnight. He had also been awakened in the night by a sensation as of emission, but nothing more. There was no history of disease or injury of the genital organs and he had never had mumps.

On examination, the patient was rather slightly built but had all the outward signs of virility. The prepuce was short and not tight. The testes were normal in size and consistence. The vas deferens could be plainly felt on each side, and there was no varicocele. A No. 19 bougie à boule passed easily to the bladder, no part of the urethra being abnormally sensitive. Per rectum, the prostate was normal to the touch and not tender on pressure. The urine was clear, acid, and did not contain albumen, or spermatozoa. He had been taking Easton's Syrup and I advised him to continue it.

On a second visit, the urine passed directly after an erotic dream accompanied by erection was brought to me, and four specimens were examined with the microscope, two after the urine had been allowed to stand for six hours, and two after twenty-three hours. In none of these were any spermatozoa to be seen. The third and last time I saw the patient he said that twice since his previous visit he had noticed a slight dampness on

his night shirt, but on these occasions there had been no erotic dream or corresponding sensation.

9. *Sterility after Lithotomy.*—As another alleged cause of acquired aspermatism, lateral lithotomy may be mentioned. The proportion of cases in which this operation is followed by sterility requires further investigation; but four cases reported by Mr. Teevan to the Clinical Society, (*Lancet*, May 23rd, 1874), afford pretty conclusive evidence that such a result may occur. All four patients were married, but none of them had emissions during coitus. The wife of one man had had two children before he was cut for stone but none afterwards. Of the other three patients two were cut in childhood and one three years before marriage; none of them had become fathers. Dr. S. W. Gross has seen sterility from the same cause in two cases (*op. cit.* p. 117); whilst another American surgeon, Dr. Haemstadt, of Pottsville, states in a letter to Dr. Tremaine (*Lancet*, April 10th, 1886), that "only one of eighteen whom I cut as boys, grown to manhood and married, has had issue as far as I can learn."

10. *Relative Aspermatism.*—A case which came under my observation in 1882 may be here related. It will be seen that it differs from Dr. Ultzmann's in the absence of emission during sleep, as well as in the fact that there was no difficulty about emission when the stimulus was of an abnormal kind.

The patient was 21 years of age, of remarkably healthy appearance, with a ruddy complexion and of very active habits. He had begun to masturbate at 13 years of age, and had continued the practice more or less up to the time I saw him. He had also had occasional sexual intercourse, but only once in his life had ejaculation occurred during coitus, though it had always taken place in masturbation. There was no difficulty about erection or intromission in coitus, and there was no emission during sleep. Five years previously he had had an attack of gonorrhœa which lasted six months.

On examination, the genital organs appeared to be normal, and there was no varicocele. A No. 19 bougie à boule passed easily to the bladder, and there was no complaint of pain during any part of its course. The urine was clear, acid, and non-albuminous. The patient went abroad soon after his visit to me, and I did not see him again.

As further illustrating the subject of aspermatism, the following case, recorded by Curling, is especially interesting because of the successful issue. The patient was a robust man, aged twenty-eight, who had suffered from incontinence of urine in his youth, but had never masturbated and had abstained from sexual intercourse until recently, when he had failed. His sexual powers were feeble and there was a great want of self-confidence. When a sound was passed, the bladder was so irritable that urine was discharged in-

voluntarily round it, but the irritability subsided after a few more introductions of the instrument and the administration of valerianate of quinine. He then took tincture of iron and cantharides, and formed relations which enabled him to test his powers. He soon succeeded in penetrating, but though he had seminal discharges at other times, coitus never ended in emission. The semen contained spermatozoa. Mr. Curling concluded that the nerves of the glans penis were wanting in excitability sufficient to produce reflex action, so electro-magnetism was used repeatedly during a fortnight, but with no good result. The acetum cantharidis was then applied to the glans, the part being afterwards left in a very sensitive state. This quite succeeded, and the patient afterwards married, and seldom failed in completing coitus (*Diseases of the Testis*, 4th edit., p. 483).

Mr. Curling also relates another case of non-ejaculation, in which the nerves proceeding to the glans penis appeared to have been destroyed by a syphilitic ulcer on the dorsum penis, or compressed in its cicatrisation.

11. *False aspermatism.*—Among other conditions preventing the escape of the semen may be included an extreme degree of phimosis. Several cases of this kind have been recorded in which the sterility was cured by circumcision.

As another possible cause, not of aspermatism, but of sterility, may be mentioned a very short fræ-

num, whereby during erection the urethral orifice may be so far dragged downwards as to prevent the ejection of the semen in the proper direction.

The treatment of these conditions is of course by operation.

12. *Idiopathic azoospermism.*—The semen of healthy men is said to be in rare cases devoid of spermatozoa without known cause. Robin states (*loc. cit.*) that among several thousands of observations he has five times noted the absence of spermatozoa from the ejaculated semen in men who had never had epididymitis. All five men were vigorous, free from disease of any kind, and virile in all respects except that they had no children. Another case, that of a vigorous man, aged forty, who had never had epididymitis, is reported by MacCarthy (Heath's *Dict. of Surgery*, Art. "Sterility in the Male") as one of this kind. The semen, however, would appear to have been examined on three occasions only, at intervals of several months. M. Robin, in the cases quoted above, does not give particulars as to how often and under what conditions the examinations were made.

In two often quoted cases by Hirtz, of Strasbourg (*Gaz. Méd. de Strasbourg*, 1861, and Schmidt's *Jahrb.* 1862, Bd. 115, p. 309), it was remarked that the patients, both young vigorous men who had not suffered from any disease of the genital organs, never felt the least feeling of exhaustion after coitus. Liégeois thinks that in these cases

the sterility was probably due to sexual excess. He also points out that the microscopical examination was never renewed in either instance.

In view of the facts mentioned in notes 3 and 14, it will be seen that the evidence ought to be very exact, and the examinations repeated under various conditions, before a case of azoospermism is called "idiopathic."

13. *Obstruction of the vas deferens.*—With regard to the question of sterility being due to blocking of the lumen of the vas deferens in epididymitis, it may be mentioned that M. Terrillon, in a paper "On the Pathological Anatomy of Epididymitis" (*Bull. et Mém. de la Soc. de Chirurgie*, no. 2, 1881), does not agree with Gosselin and others in the view that the duct becomes blocked. He thinks this is not necessary to explain the absence of spermatozoa, which in his opinion is due in many cases to persistent catarrh of the mucous surface lining the vas deferens and globus minor. M. Terrillon further remarks that, in certain experiments made by himself on dogs, he found that after injecting irritating fluids into the vas deferens the spermatozoa disappeared in an early stage of the inflammation thus set up, and before obliteration had had time to take place.

14. *Unilateral epididymitis and sterility.*—Dr. Ultzmann's statement that azoospermism sometimes follows slight unilateral epididymitis, should be

borne in mind in connection with the cases that have been called "idiopathic" (see note 12). In reference to this point it may also be mentioned that, in 1857, M. Godard drew attention to the sterile condition of men suffering from tuberculous disease of one testis. He states (*op. cit.*, p. 144, note) that tubercle of both organs always causes sterility and sometimes impotence also, while in tubercle of one side only the patient though potent is sterile. That the semen contained no spermatozoa in such cases, M. Godard ascertained in many instances, both by examination of the ejaculated fluid and also of the contents of the vesiculæ seminales and vasa deferentia. Moreover, none of those who were married had become fathers since they had suffered from the affection of the testicle. This, remarks M. Godard, may seem extraordinary seeing that one organ remained healthy, but more surprising still the fact that in several cases the sterility had preceded by from one year to two years the obvious development of the testicular lesion. From this M. Godard concludes that an examination of the semen may be of use in the differential diagnosis between tubercle and chronic orchitis on one side; for that while in the former spermatozoa will be absent, in the latter they will be present though in variable quantity. Robin (*loc. cit.*) accepts Godard's conclusion as regards this influence of unilateral tuberculous disease, and says that it has also been confirmed by Mantegazza.

These observations seem to have led others to investigate the influence of ordinary unilateral epididymitis on the procreative power. Thus, Liégeois cites (*loc. cit.*, p. 541) cases in which Duplay and Gosselin found, post mortem, both vesiculæ seminales devoid of spermatozoa. Liégeois suggests that such absence is due to the testes being "united by reflex ties." This observer himself also examined the semen in 13 cases of unilateral epididymitis, with the result that in 12 of them, which were all of the gonorrhœal variety, the specimens examined contained only from 1 to 30 or 40 spermatozoa each. In the remaining case, which was not due to gonorrhœa, there were from 100 to 150 (*loc. cit.*, p. 512). Robin also found no spermatozoa in the semen of a man who had suffered from slight epididymitis on the left side only, without any consecutive induration.

Other cases bearing on either side of this still disputed point might be quoted, but enough has been said to show that it is worthy of further investigation.

15. *The treatment of sterility caused by epididymitis.*— With regard to this point, Curling remarks that the induration of the epididymis often disappears under the steady continuance of small doses of mercury or iodide of potassium. He also cites a case of Godard's in which sterility following gonorrhœal epididymitis was cured after it had lasted eighteen months, as well as the following

remarkable one which came under his own observation: "a gentleman, aged 38, was under my care on account of induration in both epididymes after inflammation. He was married but his semen was destitute of spermatozoa. He continued long under treatment, and only at the end of two years, the induration having diminished, were spermatozoa detected in his semen." (*Diseases of the Testis*, 4th edit., p. 281).

The adverse influence of double epididymitis on the procreative power is indicated by a number of cases collected by Liégeois (*loc. cit.*, p. 381). Thus, of a total of 83 cases of double epididymitis from gonorrhœa, a return of the spermatozoa was noted in only 8 instances. Of these cases 23 were observed by Liégeois himself, 35 by Godard, and 25 by Gosselin.

The chances of recovery from azoospermism are said to be more hopeful when the preceding epididymitis has not been due to gonorrhœa. Thus, of 28 cases of bilateral epididymitis Liégeois ascertained that spermatozoa returned in 7; and that 5 of the 7 were non-gonorrhœal in origin.

In the treatment of induration of the epididymis by preparations of iodine, as well as in other conditions when the drug has to be continued for some time, it is well to remember that the iodide of sodium is often preferable to the potassium salt, as it causes much less depression. Tartarated iron may be conveniently prescribed with either drug when iron is indicated.

GENERAL REMARKS ON IMPOTENCE.

By the Translator.

The following remarks on Impotence will apply also to some extent to certain allied disorders, whose prominent symptom is a fancied or real abnormal loss of semen, and which are by many writers included under the title of "Spermatorrhœa," a term I do not use myself because at the present time it has no definite meaning. By patients "Spermatorrhœa" is used as a general name for almost any kind of sexual trouble, whilst even in the profession it is employed in different senses by different authors; so that it seems best not to use the word, until some agreement as to its precise signification has been arrived at.

One of the chief objects of these notes is to assist the practitioner to look upon these disorders of the sexual function, not as special entities to be treated in some special way, but as phenomena to be investigated and traced to their source like other morbid phenomena. It thus of course follows that in the treatment of these affections no routine plan of procedure can be laid down for general adoption. In no class of cases again is it more important to remember the intimate relation that exists between body and mind.

Each case must be carefully studied on its own merits, and in connection with its own surroundings, and the treatment to be adopted will depend entirely on the result of such study. Bearing in mind the manifold nature of the causes which may give rise to these disorders, it is desirable that their investigation should be pursued in a methodical manner. The following remarks on the subject have therefore been arranged in four sections, in the order in which it seems well to consider them. At the same time it must not be forgotten that the cause will often be complex, and consequently connected with conditions included in more than one of the four sections.

I.

The first question to be decided in any case of derangement of the sexual system is whether it is merely a manifestation of some definite disease; and though the number of cases of this kind will form comparatively few of those that come under observation on account of sexual trouble, it is desirable for obvious reasons to begin by excluding the purely symptomatic forms if possible.

When impotence is a symptom of some general malady, *Bright's disease* for example, it is most important that the presence of the latter should be recognised; for the treatment appropriate in a case when the kidneys were sound, might be in-

jurious in a case where they were diseased. Thus, it becomes clear that one of the first things to be undertaken in all cases is an examination of the urine, which moreover would also determine the question of *diabetes mellitus*—another disease not infrequently accompanied by loss or impairment of sexual power.

In regard to the connection of sexual derangements with Bright's disease, must be mentioned a form of intermittent *albuminuria* described by the late Dr. Moxon, in the Guy's Hospital Reports for 1878, as "The Albuminuria of Adolescents," and since noticed by various other writers, notably by Dr. Dickinson, who describes it as a form of intermittent albuminuria which affects young persons, mostly males, in their 'teens. The patient is usually a pallid depressed youth who may have headache and inability to study, but there is no dropsy or cardio-vascular change or increased arterial tension. The urine is usually pale, and is normal in specific gravity and quantity. It contains albumen which varies much in quantity at different times—a good deal after breakfast, little or none before. The microscope shows a large deposit of oxalate but usually no casts. The albumen after a longer or shorter time ceases to reappear, its presence being unaccompanied throughout by any more precise evidence of renal disease than anæmia (*Renal and Urinary Affections*, part iii., 1885, p. 1265).

This form of functional albuminuria is noticed

here more particularly because it has been attributed to the practice of masturbation, a habit which forms so common a factor in cases of sexual trouble. Dr. Dickinson states that Dr. Moxon constantly convicted these patients of masturbation, and that he himself has been similarly successful, so that he thinks most of the cases have this origin. It is evident that as regards prognosis it is important to remember this kind of albuminuria when that condition is present in young people.

Functional albuminuria is also said to be sometimes due to the nervous excitement produced by ungratified sexual passion. Sir Andrew Clark would appear to think that the albumen in such cases is not of renal origin, judging from the following:—"In women guilty of habits of secret personal impurity, a serous fluid is sometimes secreted into the vagina, and afterwards mixing with the urine is found therein, responding in the usual manner to the tests for serum-albumen." And again: "in some young men excited by sexual desire and denying it indulgence, there is secreted from the urethra or its adjacent glands a fluid which, mixing with the urine, yields to the application of the ordinary tests evidence of the presence of serum-albumen" (*British Medical Journal*, August 16th, 1884, p. 312). Unfortunately Sir Andrew Clark does not say on what evidence he bases his statement that the fluid which responds "in the usual manner to the tests for serum-albumen" is secreted from the vagina or urethra as the case

may be; so that, in the absence of further information, it does not seem clear how such albuminuria could be distinguished from the functional form above described, which, moreover, Sir Andrew Clark mentions in the same paper as capable of being produced by any strain of the nervous system, especially under emotional excitement. He also adds that the most numerous illustrations of functional albuminuria have occurred in young men from eighteen to thirty, whose urine was of high density and loaded with oxalate of lime.

As regards *treatment* in these cases. When the sexual trouble is associated with Bright's disease or diabetes, it must be looked on simply as a part of the more important malady, and its treatment will thus be for the most part included in that directed against the original cause; the result also will depend on the success or otherwise of such treatment.

Curling mentions (*Diseases of the Testis*, 4th edit., p. 455) several cases of impotence in young men between twenty and thirty years of age, in whom the urine remained feebly albuminous long after *scarlet fever*. In one of these recovery took place under the administration of nux vomica at night in gradually increasing doses, after iron and cantharides had afforded only temporary benefit.

In the functional form of albuminuria, if the habit of masturbation be indulged in, its evils must be plainly pointed out and its discontinuance

at once insisted on. General treatment on ordinary principles should also be carried out. Dr. Ralfe recommends (*Lancet*, Oct. 23rd, 1886, p. 766) a combination of arsenic with iron and quinine in cases of functional albuminuria, a condition which he looks upon as related to hæmoglobinuria.

Other diseases which may be accompanied by want of sexual power are *phthisis* and various forms of injury or disease of the *brain* or *spinal cord*—notably locomotor ataxy. In *peripheral neuritis*, again, impotence is according to Ross (*British Medical Journal*, Jan. 1st, 1887), probably very common; and in diphtheritic paralysis there is sometimes complete loss of sexual desire (Fagge, *Principles and Practice of Medicine*, vol. i., p. 287).

In *insanity* and *idiotcy* the sexual function is frequently affected, but in such cases it is often in the direction of excitement or perversion rather than loss of power. Thus, in the early stage of general paralysis of the insane sexual excitement is very common.

In *syphilis*, besides being sometimes associated with orchitis, impotence with or without loss of desire occurs occasionally without any discoverable lesion of the sexual organs. Keyes has met with a number of such cases in the tertiary period (*Venereal Diseases*, p. 225). Recovery usually takes place under specific treatment. I have myself noted temporary loss of the sexual appetite during the secondary stage, and it is to be regretted that this is the exception and not the rule.

Here also may be mentioned the disordered state of the sexual function with frequent seminal emissions, which sometimes occurs during convalescence from typhoid and other *fevers*, as well as certain other affections—pneumonia for example. In these cases the trouble is usually only temporary, and subsides as the patient regains his health.

With the cases of impotence due to definite causes may be included others which are due to the *ingestion of certain injurious substances* as food or medicine. Those who suffer from chronic alcoholism, for example, are often deficient in sexual vigour, as also are those who habitually resort to the use of opium or morphia; and Indian hemp is said to have a similar effect. Other drugs which have been accused of causing impairment of sexual power are chloral, iodine and its salts, bromides, lead, and arsenic, as well as alkalies generally, if taken in large doses or for long periods of time. Exposure to the fumes of bisulphide of carbon, especially in the manufacture of India-rubber, is another cause. Ross remarks (*loc. cit.*) that in paralysis due to bisulphide of carbon, the impotence which is always present is said to be preceded by satyriasis.

In these cases the most important point is of course to discover and persuade the patient to leave off the injurious substance whatever it may be, followed by the employment of such restorative measures as may seem best suited to the particular case.

II.

When no definite cause such as one or other of those mentioned in the preceding section can be discovered, there are still other conditions to be excluded before the whole blame is thrown on the sexual organs themselves.

One of the most important of these conditions is the state of the *digestive system.* It is well known that disorders of the digestive and of the sexual apparatus are often associated, though their exact relationship as regards cause and effect is not always clear. No doubt, however, this varies in different cases. It is easy to understand that the mental depression brought about by real or fancied impotence may affect digestion through the nervous system; whilst on the other hand temporary disturbance of the sexual function not infrequently follows errors in diet and consequent digestive troubles, more especially in gouty subjects.

However this may be, it is most important in all cases of sexual trouble that the state of the digestive organs should be attended to. Constipation is very common, and should be relieved by whatever means seem most appropriate. A dose of calomel and colocynth followed by a saline aperient is very effective to begin with, and if the constipation be habitual, a pill containing aloes, rhubarb, belladonna, and nux vomica, may be

taken daily after dinner for several weeks if regulation of the diet do not suffice to overcome it.

Examination of the *urine* will often afford valuable information in these cases. A too acid condition is common, and seems by its irritating action on the genito-urinary passages to increase the reflex excitability of the sexual apparatus. Deposits of lithic acid or lithates should also be looked for.

The presence of *oxalates* in the urine of those who suffer from sexual derangements is well known to be very frequent, but the reason of this is not so clear. It has been suggested that in some cases the crystals of oxalate of lime originate in the mucus of the genito-urinary passages, and Dr. Ralfe thinks it most probable that this is their origin in cases of "spermatorrhœa," for he states that if a patient suffering from this malady be directed to collect the urine passed at stool in a small vessel, and also the discharge which generally follows micturition during the act of defæcation, separately in a test-tube or on a glass slide, it will be found that both the urine and the discharge contain oxalates, which are moreover intimately mixed up in the latter, thus indicating an intrinsic origin (*Diseases of the Kidneys and Urinary Derangements*, 1885, p. 481). I may mention that in cases of gleet I have repeatedly found crystals of oxalate of lime in the shreds of muco-pus secreted by the urethral mucous membrane and washed out by the urine.

Phosphatic deposits also are common in nervous

persons with sexual trouble, and the white appearance of the urine sometimes thus produced is not infrequently the cause of great alarm to the patient, who fancies it is due to the presence of semen.

The *treatment* of these disorders must be conducted on ordinary principles according to the case, but recovery may be greatly assisted by a little friendly explanation and advice on the part of the medical man, as regards the sexual element. Another important point is careful regulation of the diet. Great moderation in or abstinence from alcohol in many cases is best, but some patients improve more rapidly on a glass or two of good claret or Burgundy at meals. Spirits and beer are as a rule best avoided altogether. Indulgence in the use of tobacco, tea and coffee, if allowed at all, ought to be very moderate.

The question of local treatment will be determined by considerations which are noticed in the next section.

Another cause of impotence is *over-use of the sexual organs*, in which case the loss of power may be taken as nature's mode of expressing the fact that her powers have been abused, and as a protest as well as a safeguard against further excess. Even apart from masturbation, which is the commonest kind of excess, such a condition of things is not very infrequent from sexual indulgence of the ordinary kind. Among the newly married, for example, excess is very common, but usually only

for a short time, and in most cases matters right themselves before any great harm results. Savage, however, has seen "several cases of young newly married people rendered emotionally insane in consequence of a few days' sexual orgie" (*Insanity and Allied Neuroses*, 1884, p. 59).

I was lately consulted by a gentleman who was suffering from sleeplessness, indigestion, and general lassitude. He had been married several months, and said that during the whole of that time he had had intercourse every night and often in the day as well. He was in a highly nervous and "shaky" condition, and appeared to have only a very vague idea that he was committing any excess. He laid the blame on his wife, and by way of trying to keep himself up to her standard of what was right, he was drinking five pints of beer a day, which did not tend to improve his general state.

There are men, again, who appear to think that sexual gratification is the great end of existence, and who fancy something is wrong if they are unable to carry out their wishes whenever an opportunity occurs. Thus, it happens that excess is committed partly from carelessness, partly from ignorance.

In all cases of *sexual excess* the obvious treatment is, after a clear explanation if ignorance be the cause, to remove the patient for the time being from all influences associated with the preceding excess. Venereal excitement of every kind must

be avoided; and then the use of tonics, change of air and scene, and sea bathing, will usually complete the cure.

In considering the question of *excess*, however, it must be remembered that the term is only a relative one; for what would be moderation in one person may be excess in another. Just as some persons have naturally a large appetite and strong digestive power, while others have a small appetite and weak digestion, so it is in regard to the sexual appetite and sexual power. Again, an amount of indulgence that would be moderate at one time or period of life may in other circumstances be excessive and even dangerous. As a rule it may be said that no man who is out of health from any cause should indulge in sexual intercourse. M. Poncet has dealt with this question (*Lyon Médical*, Nos. 5-6, 1882), and recorded cases illustrating the evil effects of coitus in various morbid conditions both medical and surgical. Before puberty, as well as shortly after, *any* exercise of the sexual function is of course excess, and the same remark applies to old men, in whom indeed impotence is a natural result. According to Curling, most men are conscious of some decline in sexual vigour after the age of forty (Quain's *Dict. of Med.*, Art. *Impotency*). This, however, is purely a relative question and one which will vary greatly in different cases according to circumstances. The age at which the sexual power declines depends on the individual, and is to be

reckoned not so much by mere years as by the previous wear and tear of life. More especially will it depend on whether the function has been abused in earlier years. Sometimes, however, impotence occurs in middle age without any obvious cause. Curling mentions one such case that was cured by careful diet, exercise, and ergot with quinine; the patient was gouty (*Diseases of the Testis*, 4th Edit., p. 456).

Before leaving this part of the subject it may be well to say a word as to the influence of an opposite state of things, namely, *non-use* or *disuse* of the organs, in producing impotence. It is interesting to note how little damage seems to result from non-use of the generative organs in man provided they have never been unduly excited; and it is rare to hear any complaint of want of power after marriage from young men who have led a chaste life previously—the word chaste being understood to include abstinence from sexual gratification whether of a normal or abnormal kind. But in later life, as also in the case of disuse of the organs, the same remark will not always apply. Thus, Curling remarks that widowers, after remaining chaste for some time, on marrying again have been doomed to disappointment. "Inaction has hastened the gradual decline" (Quain's *Dict. of Med.*, *loc. cit.*). Lastly, prolonged residence in *hot climates*, especially if the patient have lived freely, or suffered from tropical diseases, certainly seems to have an adverse influence on the sexual power.

III.

When none of the causes mentioned in the preceding sections can be held accountable for the disorder, the next thing to be done is to search for sources of irritation in the genito-urinary organs themselves or in their neighbourhood.

The commonest local trouble in sexual derangements is a tender and irritable state of the *prostate* and its urethra, due in most cases to masturbation or gonorrhœa. The subject of *local treatment* has been ably dealt with by Dr. Ultzmann in the preceding pages (44 *et seq.*). It must be mentioned, however, that although in many cases local measures are successful when carefully and intelligently applied, there are yet other cases in which they not only fail to give relief but even seem, after a time, to make matters worse. If, therefore, after a fair trial of local treatment there is not manifest improvement—and the patient's own feelings are often the best guide in this respect—it is desirable that the urethra should be left alone altogether, at least for a time, and other measures adopted. *Counter-irritation* is sometimes useful in such circumstances, and may be applied in several ways, one of the most convenient being that recommended by Sir Henry Thompson (*Clinical Lectures on Diseases of the Urinary Organs*, 6th Edit., p. 151), which consists in making a small blister every four or five days on

either side of the raphé of the perinæum by means of Liquor Epispasticus, and continuing the applications for a period of from four to six weeks. The advantage of this plan is that the patient need not lie up while carrying it out. But it does not always succeed, in which case a more extensive surface must be acted on, either by the blistering fluid or iodine liniment, and the patient confined to bed or the couch until the soreness has passed off.

In many cases of irritable prostate, again, *hot bathing* at night affords great relief from the feeling of weight and heat in the perinæum and rectum so commonly complained of. The patient may take a hot hip-bath (100° to 105° F.) on retiring to rest, and remain in for five minutes; but if this be impracticable a very good substitute may be obtained by sitting on a bath sponge placed in an ordinary washing basin containing water as hot as the patient can bear. One word as to *cold bathing* at night. This, I believe, is rarely if ever beneficial in sexual disorders, and I feel sure it sometimes does harm by the reaction which follows, and which, combined with the warmth of the bed, seems to increase the tendency to emissions during sleep. But a cold sponge bath in the morning is very valuable and may be taken with decided advantage in most cases. As in the majority of cases of irritable prostate, however, a combination of general with local treatment, at the same time or separately, will be most beneficial, a word

may be said here as to the *passage of instruments* on such patients.

In the first place then, in examining the urethra for diagnostic purposes the best instrument to use is one with a slender shaft and a bullet- or acorn-shaped extremity (*bougie à boule*) of a size as large as the meatus will admit without the employment of any force. By a flexible instrument of this kind the site of stricture or of tender spots in the urethra can be ascertained much more accurately than with other forms of bougie; but it is only suited for exploration, and causes more discomfort to the patient than the ordinary kind.

The calibre and general condition of the urethra having been thus determined, the *bougie à boule* should be exchanged, if it be decided to treat the case by the instrumental method, for a flexible or rigid instrument of suitable shape and size, according to the information obtained by the use of the explorer. If no excessive degree of tenderness be present, solid metal instruments may be used—of course with all possible gentleness—at the next sitting; but in many of the cases now in question the sensitiveness of the urethra, more particularly of the prostatic portion, is so great that it is best to begin with a tapering olivary bougie of small size and as flexible as possible, and thus gradually accustom the urethra to the presence of instruments before passing on to the steel sound, which, however, it is always desirable to reach sooner or later.

I am aware that in cases of this kind the usual advice is that only large, and preferably metal, instruments should be used. But when the deeper urethra is very sensitive the patient may often be spared much pain and alarm by beginning with small flexible *olivary* or *coudée* bougies. I have succeeded in this way in quickly reaching the larger sizes with a minimum amount of discomfort.

It has already been mentioned that it is very important to regulate the digestive organs, and particularly to procure sufficient action of the bowels. To no class of cases does this apply more than to those where prostatic irritation is present, and it may be added that the use of *saline aperient waters*, Hunyadi Janos or Friedrichshall for example, diluted with hot water and taken on rising in the morning, is often a useful adjunct to other measures. Benefit may also be derived, more especially when the urine is unduly acid and nocturnal emissions frequent, from the administration of a mixture of *bromide and bicarbonate of potassium* with syrup of orange peel. Fifteen grains of each salt may be given twice during the day and a double dose at bed-time to begin with, the quantity of either being increased if necessary. When there is no increased acidity it may be better to give the bromide in a larger dose at bed-time only, and whatever other drugs may be indicated during the day.

When the bromide alone fails, *belladonna* may be

added to the mixture, beginning with about five minims of the tincture. Another drug that is sometimes useful is *camphor*. It may be given in a pill containing three or four grains with a little extract of belladonna at bed-time, the dose being increased if necessary. According to Bartholow (*Spermatorrhœa*, 4th edit., p. 96), *gelsemium* is a more powerful anaphrodisiac than belladonna. The same author also states that both drugs may be given together with advantage in the form of tincture.

As auxiliary to purely medical treatment should not be forgotten certain well-known hints for avoiding seminal emissions, such as sleeping lightly covered on a firm bed, emptying the bladder thoroughly on retiring (Diday advises that this be done an hour beforehand also), avoiding a meal within three hours of going to bed, and lying on one side rather than on the back. For this latter purpose various expedients have been devised, such as tying a towel round the waist with the knot behind, or fixing a cotton-reel over the spine by means of a string.

It is also of the first importance that all sources of *venereal excitement* should be avoided. It is necessary to be explicit on this point, for it is curious how many persons choose to deceive themselves by imagining that if they abstain from sexual acts they are fulfilling all the requisite conditions of continence. It should therefore be explained that—from a therapeutic point of view at

any rate—the term continence includes the mind as well as the body, and that excitement produced through any of the senses, notably by the reading of salacious or suggestive literature, is hardly less injurious and sometimes more so than the sexual act itself. This remark will apply equally to young and old. The irritation set up by an enlarged and congested prostate in old men not infrequently gives rise to considerable sexual excitement, and some of these patients are rather prone to turn to questionable literature as a means of gratification. It is well to remember that such a practice greatly interferes with the success of treatment in any disorder of the genito-urinary organs, whatever may be its cause.

When prostatic irritation has been subdued by the means already mentioned, *tonics* should be given, beginning, according to the case, with the bitter infusions and mineral acids or alkalies; afterwards quinine, iron, nux vomica or strychnine, and perhaps ergot, are the chief remedies, combined according to circumstances with sea bathing, change of air and scene, cheerful society, and whatever kind of occupation seems most likely to divert the patient's thoughts from himself and his ailment.

There are certain other local conditions which may give rise to reflex irritation of the sexual apparatus, and thus occasion too frequent seminal emissions, followed in some cases by impairment of the sexual function.

The chief of these are the following :—*A narrow urethral orifice*, either congenital or acquired through balanitis, urethritis, or the contraction of cicatrices from sores. *Localised tender spots* in the urethra from chronic urethritis. These may occur at various parts of the canal besides the prostatic portion. Near the bulb, and in the fossa navicularis they are not uncommon. They can usually be detected by means of the bulbous or acorn-ended bougie; through the endoscope they can be seen, and by means of this instrument any necessary application can be made far more accurately than in any other way. *Balano-posthitis* is a very common cause of irritation, and should always be looked for in patients with sexual trouble; the form of inflammation caused by saccharine urine should also be borne in mind. *Abnormal conditions of the prepuce.* Phimosis is the most common of these. It should be remembered that it is not necessary that the phimosis should be complete in order to cause irritation, and that though retraction of the prepuce be comparatively easy in the flaccid state of the penis, it may not be so during erection. But mere length of the prepuce without tightness is sufficient to account for a sensitive and irritable state of the mucous surface if the glans be kept habitually covered, and the patient be not very careful about cleanliness. Thus, in estimating the effect of peripheral irritation of this kind, it is important to look not only to the presence or absence of phimosis, but to the condition of the

mucous membrane. A red, moist, sensitive state of the surface, whether due to accumulation of secretion from want of cleanliness or any other cause, is sufficient in some cases to give rise to sexual irritation without the presence of phimosis.

The *treatment* of these local conditions presents little difficulty. The great point is not to overlook them. A narrow meatus should be enlarged with the knife; dilatation in this situation gives very unsatisfactory results. Inflamed patches in the urethra will require the passage of instruments and perhaps also local applications, which are best made through the endoscopic tube. The treatment of phimosis will depend on circumstances. If there are no adhesions or cicatricial tissue, dilatation sometimes succeeds, but unless the patient be attentive to cleanliness afterwards, circumcision answers best. When the mucous membrane of the glans and prepuce is tender and sensitive, it should be hardened. To this end the parts should be washed twice a day, and afterwards bathed with a spirit lotion or one containing tannin or some other astringent. A piece of lint or wool should also be interposed between the glans and prepuce, and when the moisture is excessive a little oxide of zinc powder may be used also. In all these cases it is desirable that the patient should gradually accustom himself to wear the prepuce back instead of forward. When a short frænum causes inconvenience in coitus it should be divided.

Varicocele is another affection that is rather frequently though by no means always present in cases of sexual trouble, but the exact relationship between the two is not fully made out. Every medical man knows that in a large majority of cases a varicocele occasions no inconvenience whatever in regard to the sexual function; on the other hand, in some of the worst cases of sexual disorder there is no varicocele at all. It will be sufficient here to point out that a varicocele should be supported by a well-fitting suspensory bandage, and that cold bathing and sometimes astringent lotions also are very useful. Only when a varicocele causes pain or is obviously mischievous in some other way—either by causing sexual weakness or by interfering with the patient's calling in life, should an operation be recommended.

Finally, certain other affections of the genital organs and neighbouring parts are capable of causing reflex irritation, and should be enquired after in the absence of more likely causes. Among these may be mentioned herpes, eczema and other skin diseases of the penis, scrotum, perinæum or anus; fissure, piles, and other anal and rectal troubles including the presence of thread-worms.

Though the preceding remarks on local sources of irritation refer chiefly to the periods of adolescence and adult life, something of what has been said will apply also to *children*, in whom the presence of genital irritation will be very likely to lead to masturbation with its consequences in after life.

The condition of the *prepuce* especially should be looked to in childhood, not only on account of trouble at the time, but because repeated attacks of balano-posthitis gradually set up an unhealthy cicatricial condition of the mucous membrane, rendering it particularly liable to crack and tear, and thus open the door to venereal contagion at a later period of life. The irregular pits and crannies also which are the result of partial *adhesions* between the prepuce and the glans, by forming foci for the lodgment of the natural secretion as well as of contagious matter from without, eventually become perpetual sources of irritation and of danger.

IV.

The last point, always an important one and often the most important of all, to be considered in cases of sexual disorder is the state of the *Nervous System*. Savage has truly said (*op. cit.*, p. 145) that nothing in the world so depresses a man as the belief that he is impotent; and everyone who has had much to do with such patients must agree with him. The nervous factor, it should never be forgotten, is always present, whether associated or not with one or more of the conditions which have been noticed in the preceding sections, and must always be taken into account if the patient is to be treated with success.

The fact that *masturbation* is in so many cases the

primary cause of sexual trouble seems to account in some measure for the nervous phenomena, which, however, are certain sooner or later to follow any kind of abuse of the sexual function.

The extent to which the nervous element prevails in any given case will vary greatly; but as a rule it may be said that the more sensitive the nervous organisation of the patient, the earlier and the more acutely will he suffer. The higher the development of the moral sense the more easily will it be damaged, particularly if a neurotic tendency be also present. But it by no means follows that the degree of nervous depression corresponds at all with the severity or otherwise of the physical lesion, if such there be.

Given then some preceding sexual abuse, and especially if there be also a neurotic tendency, the way in which the climax comes about is often somewhat as follows:—A young man, often highly educated and perhaps of more than average intellectual power, from one or other of almost innumerable causes of *mental strain or worry*—reading for an examination for instance—neglects to take sufficient exercise, gets his general health upset and his digestive system out of order. By and by the sexual apparatus becomes disordered too, and nocturnal emissions occur. These gradually become so frequent that the patient gets alarmed, begins to brood over his troubles, and perhaps takes to reading books which he thinks bear on his case. Then the recollection of old bad habits comes back

to him, and he imagines that they are in some way connected with his present state, draws false inferences, and ends by convincing himself that he is impotent and incurable.

The same end may be arrived at from the starting point of a *marriage engagement*, an event which is not infrequently a cause of much retrospective self-examination. During such an engagement these nervous persons suffer from repeated sexual excitement which, if not gratified, is naturally soon followed by an undue frequency of seminal emissions, and a sequence of events similar to what has just been described. When marriage is in question, however, matters may assume a more serious aspect. The patient thinks himself unworthy of the object of his affection, and if his morbid condition be not checked, he gradually, by continued brooding, becomes reduced to a state of despair, owing to a conviction either of moral unworthiness, or physical incapacity, or both. If before this state of things has lasted too long he have the courage to seek advice and be still capable of profiting by it, recovery will usually take place; but such cases are difficult to deal with, and sometimes the patient gradually lapses into a state of dementia, or he may commit suicide, as actually happened in a case recently under my own observation.

In other cases again, the causes of nervous depression are purely imaginary, and arise simply from the fact that the patient is *ignorant* of the

natural functions; sometimes also a man will fancy himself deficient because he is not so vigorous as some friend is—or says he is, for these boasters exaggerate greatly in such matters. Here a simple explanation of the fact that the sexual appetite and the power of gratifying it vary in different persons, just as much as the appetite for eating and drinking varies, will generally relieve the patient's alarm and send him away contented.

Loss of power may also occur from various other causes. Curling considers want of self-confidence the commonest cause of impotence. This has been dealt with by Dr. Ultzmann in the section on psychical impotence. The dread of contracting disease or of causing pregnancy might also be included, as well as intense or too prolonged sexual excitement before attempting coitus. In cases of this kind the want of power is mostly quite temporary, perhaps occurs only on a single occasion, in which case it will hardly come under medical notice at all. But if the failure happen to lead to the recollection of previous bad habits and consequent brooding over them, it may in its turn become the starting point of considerable future trouble in patients of unstable nervous organisation.

Lastly, there remain to be mentioned certain cases in which the natural instinct is deficient, sexual desire being altogether absent. In some of these, examples of which have been recorded by Curling and many other observers, there is some

manifest defect or want of development in the sexual apparatus. In other cases, however, so graphically described by Sir Astley Cooper (*Lectures on Surgery*, 4th edit., 1835, p. 633), there is total want of the sexual appetite without any discoverable defect in the organs themselves. In a case of this kind which came under my observation a few years ago, the patient was a healthy looking man, aged twenty-six, with nothing unusual in his general appearance, or, so far as could be ascertained by external examination, in the genital organs. He stated that he had never experienced any sexual desire, though he had occasional erections in the morning as well as nocturnal emissions. He had attempted intercourse several times, not at all from inclination, but simply because he wished to be like other men. On no such occasion, however, had either erection or emission occurred. There was no history of injury or severe illness of any kind, and the urine was free from albumen and sugar. There was a family history of gout, but the patient himself had never suffered. His brothers were said to be normal with regard to sexual relations.

From the preceding remarks it may have been gathered that in all cases of sexual disorder except those depending on organic disease, the nervous element constitutes the most important and often the most difficult point to deal with, both as regards prognosis and treatment.

Much might be written on this question, but in

this place it must suffice to indicate in the briefest manner the *lines of treatment* which it is desirable to follow. These are:—1. To persuade the patient to look upon his trouble as curable. 2. To remove him, if possible, from everything and everybody connected with or likely to remind him of the past. 3. To lead him to employ both body and mind in some useful and congenial manner. 4. Change of air and scene is always beneficial. When practicable, a course of *foreign travel* with frequent change of locality, is an excellent means of diverting the mind in these cases, and to this end an incidental *sea voyage* will contribute more or less according to the patient's fondness or dislike of the sea. A long voyage, however, should only be recommended with caution to patients suffering from sexual trouble, particularly if a tendency to hypochondriasis be a prominent feature in the case. To send a nervous youth addicted to masturbation or a sexual hypochondriac alone on a long voyage in a sailing ship, is to place him in circumstances most unlikely to be beneficial. The monotony, idleness, and over-feeding incidental to such a voyage, are just the things to be avoided by the class of patients in question; so that although travelling by sea as a means to an end is excellent, a long voyage ought only to be recommended under suitable conditions, especially as regards companionship and supervision.

With regard to *drugs:* besides those already mentioned in the preceding sections, valerianate of

zinc with rhubarb and nux vomica is sometimes useful in sexual hypochondriasis, and arsenic alone or with some preparation of iron may also be tried.

In reference to the so-called *aphrodisiacs*—cantharides and phosphorus for instance—Curling remarks that the condition in which they are applicable is chiefly that in which the penis is but feebly excited, and does not maintain the physical state necessary for penetration or for congress. Such torpidity may exist in persons in whom desires are at times strongly felt, and the functions of the testes properly performed. In these cases, also in timid persons, and in others whose organs are inexcitable from long disuse, stimulating treatment may be successful (*op. cit.*, p. 459). Aphrodisiacs should not be used in cases of sexual excess, nor should they be given to old men.

The fluid extract of damiana has been recommended by some American writers as a valuable nerve tonic in sexual debility, and Bartholow remarks (*op. cit.*, p. 103) that cimicifuga has proved useful in cases of long-standing "spermatorrhœa," accompanied by nervousness and anxiety and diminished desire. The same observer further states that he has found jaborandi in doses of thirty minims of the fluid extract night and morning, still more efficient.

Lastly, the question of *marriage* will sometimes arise, and it is often a difficult one to decide. It will hardly be necessary to point out that marriage

is never to be recommended solely as a curative measure. In all cases where the idea is entertained the patient ought to have reasons for marriage other than those connected with his own physical benefit, and he ought not to have lost al sexual desire. The doctor also ought to be satisfied that there is no reason why adequate power should not be recovered under the physiological influences of married life. In these circumstances it may be said, as a general rule, that when the patient is under forty, when there is no organic disease, and when the nervous symptoms are slight, marriage will be beneficial, or at least is not contra-indicated. Under other circumstances caution must be exercised, and in forming an opinion the question of the happiness of the future wife ought always to be considered as well as the effect of marriage on the patient himself.

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