

1. For the first few hours—conservative, sedative, and depletive treatment. *Vide* treatment for mild cases with, in addition:—

- (a) Gastric lavage for the removal of fermenting food and oral administration of medicines.
- (b) Sweating by hot packs and electric cradle.
- (c) Rectal lavage, drop instillation of sodii bicarb. and glucose.

(c) *Severe cases.*—When convulsive fits are very frequent the blood pressure is high, 175 m.m. upwards, cyanosis, embarrassment of respiration and conservative treatment fails to improve.

(1) Venesection—12 ozs. or more of blood is let from the median basilic vein and a pint of sterile sodii bicarb., solution (dr. i to oz. i) in normal saline introduced.

N.B. Venesection is absolutely contraindicated if the blood pressure is below 150 as it causes severe cardiac depression, shock and anæmia.

(2) Subcutaneous saline with sodii bicarb.

(3) Digitalin and veratone injection discriminately.

(4) As regards labour. A primigravida developing frequent severe fits before labour with os closed, child alive, cervix not taken up and patient passing no urine. Caesarean section is strongly advocated and is undoubtedly better than forcible extraction through the imperfectly dilated cervix. Increasing Western experience shows on the strength of considerable numbers of Caesarean sections that it is the safest, easiest and most satisfactory treatment. Of course when the ideal conditions are not at hand then medical measures with rupture of the membranes, hydrostatic dilators, bipolar podalic version are advocated. But the mortality of such is appalling; 44 per cent. for mother and 98 per cent. for child.

VITREOUS ESCAPE IN INTRACAPSULAR EXTRACTION OF CATARACT IN PROMINENT EYE-BALLS OR FAT PATIENTS.

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If both fornices are exposed to view when looking from the side, the assistant has efficiently managed the lids and the eyebrow and vitreous should not escape. This is *the* test. The surgeon should satisfy himself in this respect before opening the eye-ball.

Exposure of the fornices is easy when the globe is shrunken and in patients of slender constitution. It is sometimes impossible with prominent eye-balls and in fat people. In the latter case the following step requires to be taken to avoid vitreous escape.

1. Let the assistant manage the lids and the eyebrow.
2. Make a preliminary conjunctival flap if you make one.
3. Take a small pledget of cotton wool. Place this whilst wet upon the exposed eye-ball.
4. Place your thumb, index finger and the middle finger on the cotton wool pledget erect upon the eye-ball. The tips only should rest on the sclerotic and not on the cornea.
5. Gently press the eye-ball backwards, steadily increasing the pressure, whilst you mentally count two hundred.

6. The patient should not complain of pain. If he does, reduce the pressure a little.

7. Remove the pledget and you will find, (a) the cornea somewhat steamy; (b) any bleeding from the conjunctival flap stopped; (c) the secretion of tears stopped. Any danger of infection is reduced, as the eye-ball is dry; (d) troublesome patients who constantly roll their eye-ball upwards begin to behave better. Irritability is reduced; (e) the danger of expulsive hæmorrhage is diminished when the tension is plus; (f) careless pressure on the cornea erodes the epidermis; (g) when expressing the lens with the hook, the cornea is found to be dipping in easily. The tension being reduced, the feeling is that of pressing on to something softer than one is accustomed to do; and (h) *vis a tergo* of vitreous is absent or is reduced considerably.

After giving this method a fair trial, I brought it to the notice of the Profession in a paper read before the All-India Medical Conference at Delhi in 1918. Since then I have practised it without the least harmful results.

GONORRHOEA OF THE FEMALE GENITAL ORGANS AND ITS MANAGEMENT.

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In a paper on pelvic infections read before the Chicago Gynæcological Society, I classified such infections as descending and ascending. The descending infections are caused by continuity of organs, by blood and lymph infection of tissue. The ascending infections are from without, *per vias naturales*, 99 per cent. of the ascending type are either puerperal or gonorrhœal.

For convenience of description, gonorrhœa of the female generative organs is usually divided into external and internal invasion. The external infection extends to the internal os, involving the glands of Bartholin, Skene's glands in the urethra, the racemose glands of the cervix and the interlying mucous membrane with its countless glands. Internal infection comprises the female organs above the internal os: the uterine cavity, the tubes, the ovaries and the pelvic peritoneum.

In order better to understand the *modus operandi* of the gonococcus as also the methods of ridding the tissues of this micro-organism let us examine some of its characteristics. The gonococcus differs from other microbes in many respects. It is most easily affected and killed by heat or cold. It is heat-sensitive both *in vitro* and *in vivo*. An optimum temperature for it is 97° to 98° F. Any appreciable increase in temperature has a very deleterious effect on the life and growth of the organism. A sudden rise to 102° means certain death to

the culture. The culture medium must be of a special kind, of proper reaction, great care being needed that the medium is not chilled on inoculation. Desiccation is highly deleterious to the organism. Mixed inoculation of the culture medium easily overwhelms and kills the gonococcus, the growth of which, at best, is very scanty. It is readily destroyed by very mild antiseptics.

With all these non-resistant properties, why is it that gonorrhœa of the female genital tract is so intractable, and once above the internal os, why is it, as a rule, beyond one's therapeutic reach to prevent tubal infection with its concomitant sterility or one-child marriages ?

To understand this we have first to study the tissues of the female genital tract involved in gonorrhœal invasion, secondly the mode of invasion and extension of the organism.

The glands of Bartholin, glandulæ libidinis, are situated at the introitus vaginæ, posteriorly in the lower portion of the labia majora, partly or wholly covered by the sphincter vaginæ muscle. Their size varies from that of a small bean to a large bean, according to the age and sexual life of the patient. The duct is about $1\frac{1}{2}$ centimetres in length and runs upward and inward. There may be duct infection alone or duct and gland infection. These glands are the most frequent harboring places for the gonococcus, and failure to recognise this may be the cause of continued unsuccessful treatment of husband or wife alone; a reciprocal infection, albeit of mild degree, may be kept up indefinitely. Normally the gland cannot be felt excepting, perhaps, in greatly emaciated women. In a Bartholinitis of long standing, with sclerosis, we have the so-called "adenitis glandulæ Bartholini sclerotica" of Saenger, in which case the gland is readily palpable. In ordinary infections the tenderness on pressure with escape of a drop of pus, and the macula, will readily establish the diagnosis.

Infection of the female urethra, more so than in the male, is a self-limited disease; if Skene's tubules are involved, however, the condition may persist indefinitely. Skene's tubules, two in number, on the floor of the urethra, extend from the mouth of the tubules, opening just internal to the external meatus, about one centimetre back parallel to the urethra. Schueller has called attention to the fact that, occasionally there are supernumerary glands. This should be borne in mind in intractable cases. Pain, tenderness and discharge are the symptoms of infection.

Deeper-seated and more complicated is the infection of the cervical glands. These glands are of the racemose type and branches of the arbores vitæ often extend deeply into the myometrium. A deep-seated infection of this type causes turgescence of the cervix and the crypts

and folds in the cervical canal are filled with the characteristic thick, white, tenacious mucus so well known by the term leucorrhœa. It goes without saying that this leucorrhœal discharge may be as infectious as the gonorrhœal pus. This plugging up of the cervix enhances the possibility of the infection invading the region above the internal os. Although the internal os, as a rule, is a natural barrier against any extraneous matter attempting to enter the uterine cavity, there are times when the fibres of the os relax and a suction movement of the corpus uteri facilitates the upward movement of vaginal contents whatever they may be.

Compared with other pyogenic organisms, such as the streptococcus and the staphylococcus, the gonococcus has little or no power of penetration. It generally develops on mucous membranes and it spreads by extension along the mucosa and the submucosa, and very infrequently extends into the deeper structures. Where squamous epithelium exists the changes produced by the organisms are slight as the cellular elements are too resistant to its growth. But in the true mucosa the surface epithelium swells, the cells are separated by the inflammatory exudate and soon desquamate, later to be replaced by modified epithelium or cicatricial tissue. The organism quickly gains access to the glands, producing desquamation of the epithelium investing the glands, periglandular inflammation, usually destroying the epithelium and its basement membrane with abscess formation. In such pus-pockets the germ may persist indefinitely, producing chronic inflammation. It may be mentioned in this connection that Bandler and Doederlein believe that the micro-organism present in acute gonorrhœa produces an acute inflammation whilst those present in a chronic case produce chronic inflammation. McDonagh holds that an acute case has a short incubation period and *vice versa*.

The gonococcus may lie dormant in the genital tract for indefinite periods of time and may become active at any time if there is a congestion of these organs for physiological or pathological reasons, as during pregnancy or miscarriage, excesses of any kind, menstruation and puerperal infections. We have probably all heard of the common belief amongst the laity that the menstrual discharges are infectious and cohabitation for that reason, if for none else, should be avoided. This, as is easily understood, is due to the recrudescence of any latent disease during the menstrual epoch, following pelvic congestion, as also to the neutralization of the normally acid vaginal secretion.

The predilection of the gonococcus for columnar epithelium is the cause of the great frequency of cervical complications. Approximately 80 per cent. of the acute and 95 per

cent. of the chronic cases are affected with endocervicitis. Occasionally we find an engorgement of the portio vaginalis covered with squamous epithelium resulting in retention cysts, ovula Nabothi. Much could be said about the microscopical changes in the cervix during this inflammation, suffice it to say that metaplasia of the cervical epithelium is almost the rule. Microscopically the swelling and hyperæmia of the cervical mucosa is so great that it protrudes from the external os. Endocervicitis has a tendency to become chronic, whereas an endometrial involvement tends to resolve. An endometritis may be kept up by re-infection from the tubes. With an invasion of the endometrium the tubes are invaded apparently simultaneously. Spread of the infection from endometrium to tubes is favoured by anatomical conditions. Whereas the myometrium is involved occasionally, only producing a degenerative process, it is in the tubes in almost every case that the principal and lasting havoc is wrought. Salpingitis, pyosalpinx, hydrosalpinx, tubo-ovarian abscess, pelvic peritonitis and adhesions are produced.

Gonorrhœal lesions of the Fallopian tubes possess certain characteristics that are pronounced enough in the majority of cases of pure infection to prove the etiology of the infection. The gonococcus, as already mentioned, invades the tubes by continuity of tissue along the mucosa, whereas pyogenic microbes reach the tubes by the blood and lymph stream of the broad ligament, leaving marks of their invasion in their wake. Inasmuch as the former invites localization of the latter we find countless cases of mixed infection with non-characteristic morbid anatomy.

Treatment.—Bearing in mind the heat and germicide-sensitiveness of the gonococcus, one would be led to believe that early and energetic application of either heat or germicides would promptly rid the tissues of the invader. This assumption would be corroborated by a consideration of the efficacy of Cr  d   prophylactic treatment and by the rapidity with which a gonorrhœal conjunctivitis, once established, can be cleared up, albeit in many instances not speedily enough to prevent damage to the cornea.

In my opinion injudicious and frequent douching is a predisposing factor to infections of the female genital organs. We all know that a certain flora has its natural habitat in the vagina, that the *Bacillus vaginalis* normally is constantly found, that it only thrives in an acid medium and is distinctly destructive to pathogenic microbes introduced into the vagina, as has been proven by experiment. Anything altering the acid reaction of the vaginal secretions, as a profuse leucorrhœa coming from the alkaline cervix, frequent connubial relations or regular and frequent

douches will destroy this natural microbicide and thus prepare the way for infection.

The necessity for early treatment is obvious, and our best results are obtained by early, judicious, unhampered management of the case. The difficulty in the treatment of female gonorrhœa mainly lies in three factors. First the cases do not present themselves during the initial stage of the disease, and if they do appear for relief the prescribed line of treatment is not followed. Secondly, the above described anatomy of the female organs is such that self-re-infection of the tissues constantly takes place because the hiding places above referred to are often overlooked. Thirdly, too little treatment, inasmuch as the application as ordinarily made of bactericides is faulty, tends to cause increased irritation and spread of the infection.

In men an acute attack of gonorrhœa is well marked and is evidenced by pain and intensely painful micturition, general malaise and depression. Sexual thoughts are repugnant to the patient, and as a rule he most ardently seeks medical aid; and, as long as the acute stage lasts, religiously carries out the instructions. At this time there is no danger of dissemination. The danger sets in when patients believe themselves cured whilst in fact they are far from it with their scanty gleet discharge.

In women, on the other hand, the initial symptoms are mild with few exceptions; in fact often there is no other symptom than more or less profuse purulent, often mucopurulent, discharge. Many patients may not even know that they are affected with the disease. At this time women are often disseminators. They do not think of seeking medical aid but do everything and anything favouring invasion of the internal organs. If such a woman, usually more or less frivolous, does come to a physician, she does not, as a rule, care to be inconvenienced by the treatment. Often physicians, on account of the false modesty of the patient or through indifference or ignorance, fail to treat the glandular invasions of the genitals and thus not only self-reinfection of the vaginal tissues takes place but reciprocal reinfection of husband and wife may be carried on *ad infinitum*.

Derby and others have shown that the local action of corrosive sublimate and nitrate of silver is materially lessened by the addition of serum. Thus one hurried, scanty application of a germicide may lose its strength through this dilution.

By meddling treatment we understand injudicious douching, intracervical and even intrauterine applications when not indicated. More harm than one would imagine is done in this way.

Granted that the case comes into your hands at the earliest stage of the disease, in my opinion nothing is more beneficial than rest in bed and nothing is more harmful than over-treatment. By rest in bed I mean lying in bed and resting even to the exclusion of arising to answer the calls of nature. At this stage in women more so than in men exercise is apt to cause spread of the disease to the glands and internal organs. It goes without saying that an even more fruitful cause of complications is sex relations. One can hardly believe that it should be necessary to lay stress on this point. Even in spite of my warning, loose women would leave the hospital, go to a public dance; indulge in their illicit practices and come back four or five days later with a salpingitis. Besides rest in bed, external douches of a mild solution of potassium permanganate, careful instillations into the vagina of a 10 per cent. solution of argyrol, a moist boric acid pad, light, non-irritating diet, free catharsis, would constitute a conservative and usually successful treatment of an acute gonorrhœa of recent origin.

Unfortunately in many instances the cases do not come under treatment at an early stage of the disease and often not until the entire external tract is infected. At this stage again the two above named factors are productive of invasion of the uterine cavity, namely, meddling treatment, sounding and intrauterine applications and sex relations. Even in non-specific cases often more harm than good is done by intrauterine manipulations. Suffice it to say, that if, after careful, gentle examination of the internal organs, we are convinced of the freedom from infection of the tubes, we should limit our treatment to glands and cervix.

Infection of the glands of Bartholin may be of two types, first infection of the duct as shown by the presence of the gonorrhœal macula without swelling in the region of the gland, secondly infection of the gland tissue with the characteristic enlargement and tenderness. As stated above a normal gland cannot be palpated. As soon, therefore, as the gland is felt, the quickest and most radical treatment is excision. The gland tissues are destroyed as it is, and the sooner one rids the body of such a source of reinfection the quicker the disease is coped with. A preliminary forcible injection of the gland with methylene blue may be made to facilitate removal, but even this may not reach all parts of the gland, and with or without injection, great care should be exercised to remove all gland substance.

Infection of the female urethra is a self-limited disease and intraurethral applications may enhance invasion of Skene's tubules and Schueller's glands. If a urethritis does not clear up promptly an infection of these tubules

on the floor of the urethra may be assumed. The best treatment is splitting these tubules longitudinally through a urethroscope or destroying them with a cautery needle. The only evidence of implication of the urethral glandules is chronic urethral discharge, without much, if any, pain, tenderness or palpable swelling.

The treatment of a gonorrhœally infected cervix would make a long chapter if careful consideration from every angle be given. The treatment varies according to the age of the patient, the possibility of further offspring; the morbid anatomy, whether the infection is associated with lacerations, uterine misplacements and cystocele; the condition of the vaginal orifice, whether treatment, as in a very young and sensitive girl, is difficult and morally, perhaps, unwise. This last factor should not often prevent us from giving aggressive treatment if indicated.

Inasmuch as gonorrhœal endocervicitis has a strong tendency to become chronic, in fact, most cases come under observation when they have reached the subacute or chronic stage, we may first consider the treatment of this type of infection. We find a swollen, hypertrophic, eroded cervix, with many ovula Nabothi, and, as the case may be, lacerations. As a rule in such cases, with patulous cervix, the infection is subacute or chronic and invasion of the internal organs and sterility has supervened. Trachelectomy of Sturmdorff might be performed, but I usually prefer amputation, being most painstaking in my consideration of the amount of cervical tissue to be amputated. If there is a possibility or desire for further offspring I would make the lowest possible amputation, exercising great care to get sufficient flap from above and below, thus avoiding much scar tissue and contraction of the external os. Such cervixes, as a rule, will not cause trouble at childbirth. Where no further offspring is expected and an intra-abdominal operation is called for, I would make a high amputation and sterilize the patient.

Gonorrhœal endocervicitis in a nulliparous young woman requires most judicious care. It is our duty not only to preserve the patient from chronic invalidism but also to preserve her internal sex organs for reproduction. Extension of the inflammatory process is most prone to take place during menstruation and sexual relations. The latter must be scrupulously avoided and during the menstrual epoch the patient should rest, if at all possible, in bed. For treatment an anæsthetic is usually required.

The external os and the lower cervix are dilated and a strong germicide applied. I recall Saenger's treatment, whose Privatissima Clinic I attended in 1896. The stereotype treatment of hundreds of ambulatory cases

was:—pink permanganate douche, application of 50 per cent. solution of chloride of zinc to the cervix and into the cervix. He would often demonstrate the action of this Escharotic on the mouths of the cervical glands as a diagnostic feature. He also frequently used this powerful germicide intracorporeally. Since then I have used chloride of zinc a great deal, mostly however in 25 per cent. solution. To dilate the cervix safely without entering the internal os a solid dilator, with shoulders of right distance from the tip, so that entry into the os internum is impossible, should be used. With proper care, of course, any dilator may be used. Application of a 25 per cent. or 50 per cent. solution of zinc chloride with an iodoform gauze pack, to be removed after 8 hours, would finish the treatment. After two or three weeks this treatment may have to be repeated. Instead of the ordinary cotton applicator I often employ a long, thin cannula, with numerous side openings, wrapped with cotton and attached to a Pravatz syringe and thus impregnate the applicator with the germicidal agent after introduction. The diluting admixture of mucus to the germicide, reducing its potency, would thus be counteracted.

During the past few years protein therapy and non-specific resistance have been the subject matter of much discussion and writing. Space does not permit going into detail with regard to this most interesting biological topic. Suffice is to say that some competent observers as Finfer, Petersen, Saxl among many others, are very enthusiastic over their results from this therapy, others are not so sanguine as to its usefulness. My experience with non-specific agents is confined to their application in various types of subacute rheumatism. And, taking into consideration the difficulty of following up cases in an Indian country clinic, my results would warrant further trial. The conviction of Wright, that this method is one deserving of the most careful examination, I would share. Gonorrhœa, the world over, is one of the worst scourges mankind is heir to; in this instance womankind, which in, I dare say most instances suffers innocently. Any method of treatment aiming at eliminating mutilating operations should be carefully scrutinized before discarding it as useless.

To Mr. K. C. Paul, of the Madras General Hospital, I am indebted for his co-operation in points relating to pathology and morbid anatomy.

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THE USE OF GERMINATED PULSE AND BEANS IN THE NATURAL DIETARY OF THE BURMESE.

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WHEN Miss Harriette Chick and Miss Margaret Hume published their paper on "The Distribution among Foodstuffs of the Substances required for the Prevention of Beriberi and Scurvy," in the Transactions of the Royal Society of Tropical Medicine and Hygiene, 1917, they ascribed to Furst the credit of first advocating the use of germinated pulse as a food for the prevention of deficiency disease.

I have been unable to obtain a copy of Furst's original paper, and do not know, therefore, whether or not he claimed the credit of initiating the use of germinated pulse as a general article of diet, or as a preventive of deficiency disease.

Until quite recently I had never come across the use of germinated pulse as a natural foodstuff, and I was surprised therefore to find it exposed for sale in the bazaar at Insein, a township about ten miles from Rangoon.

Further enquiries quickly revealed the fact that germinated pulse is on sale in the vegetable markets of Rangoon and throughout Burma, and is in general use as an article of diet.

I propose to state what I have been able to ascertain about the common use of this foodstuff, and to describe the methods used to bring about germination and to prepare the food for consumption.

Germinated pulse is widely used by the Burmese as a food. It is sold in all vegetable markets and prepared by the housewife in most private houses, and is consumed by all classes of Burmese. It is an inexpensive food and is therefore readily procurable by the poor.

Various pulses are in use in different parts of the country and, practically speaking, any of the dals, beans, or peas may be prepared in this way, but certain species are considered better than others and are used for preference. These species are:—

PULSES.

1. *Phaseolus mungo*, variety *radiatus* (Linn). This is known in Burma as *Pè-di*, *Pè-di-sein*, or *Pè-nauk*, and is the ordinary green *Mung Dal* of India. It is one of the pulses most widely used throughout Burma for germination, and is the variety most highly appreciated.