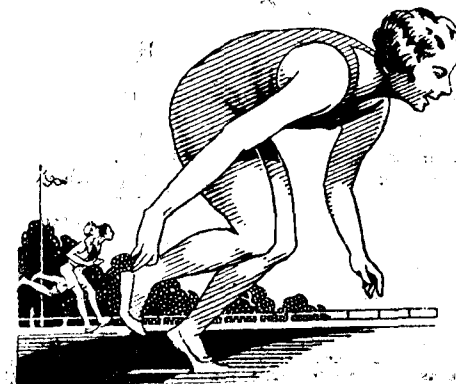


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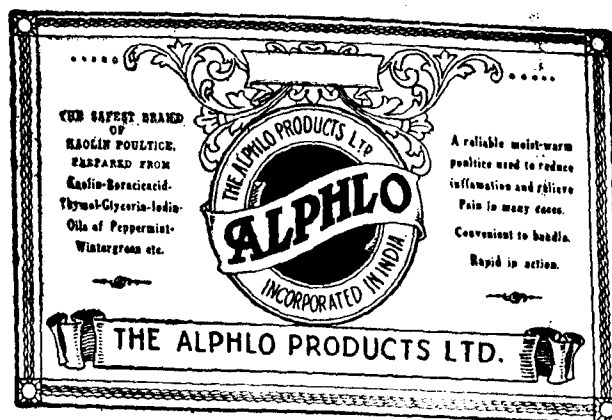
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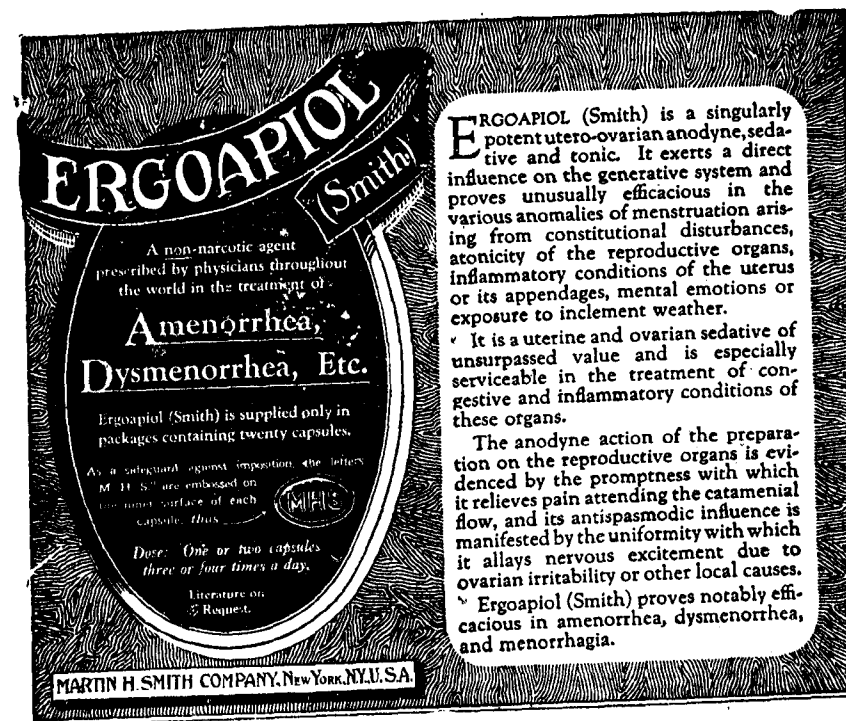
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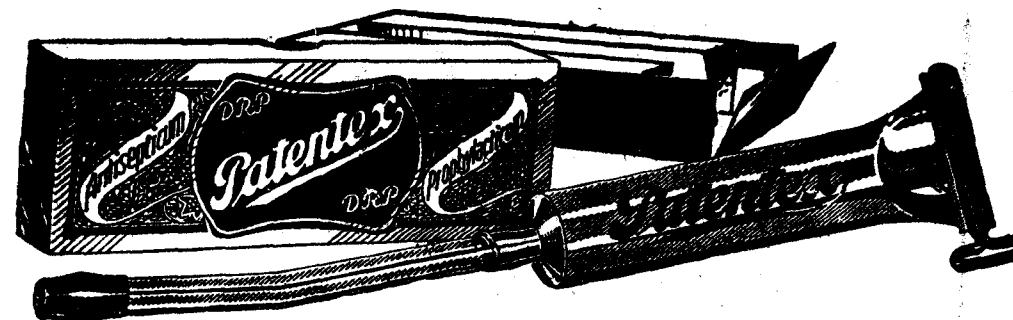
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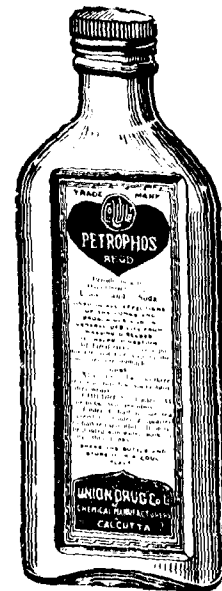
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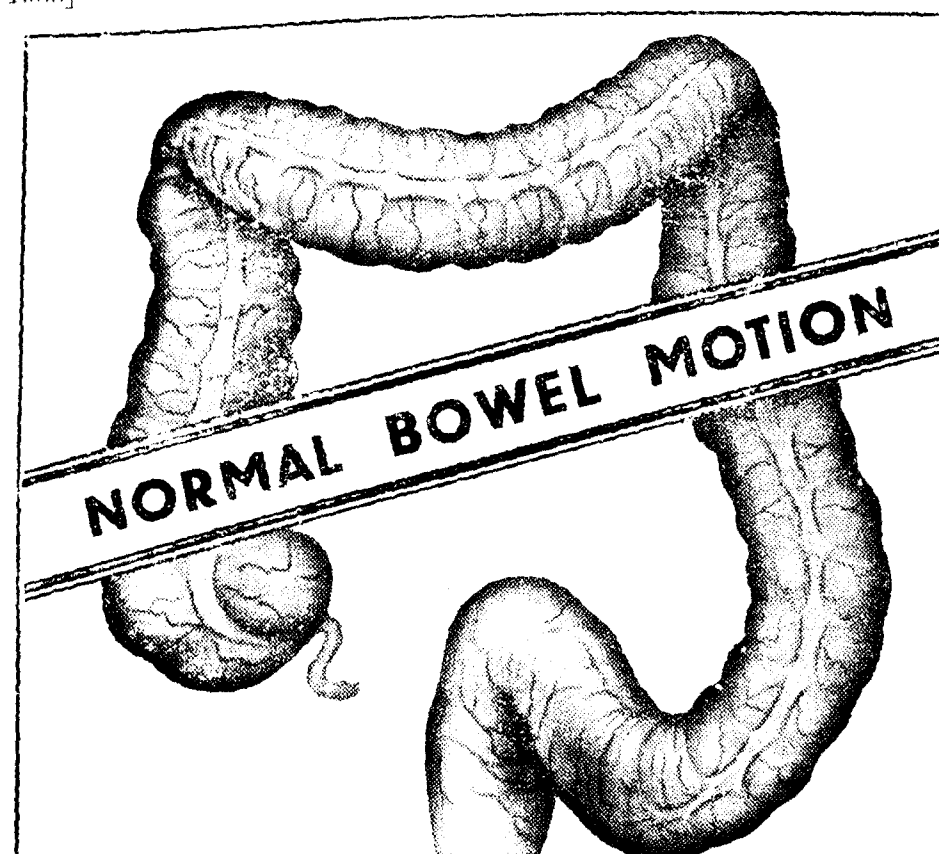
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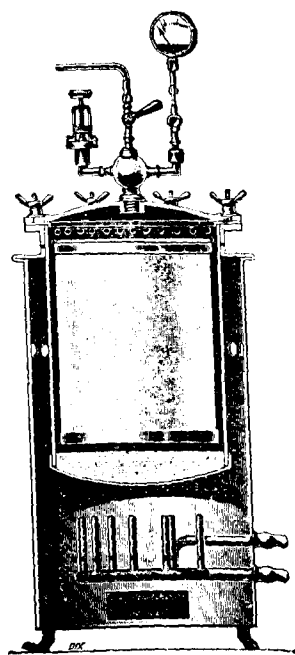
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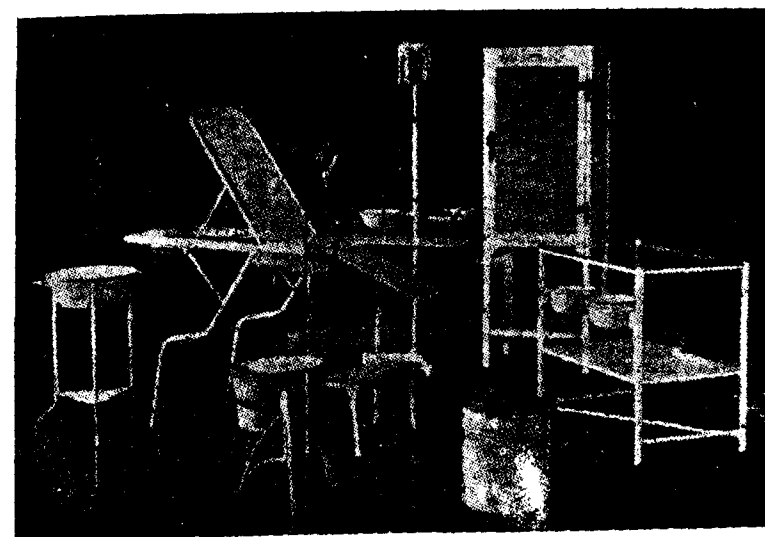
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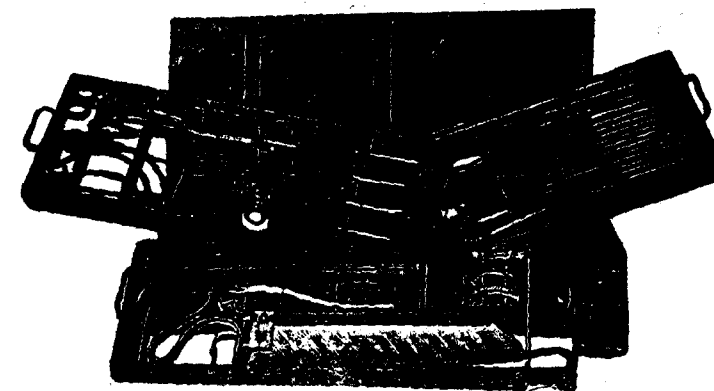
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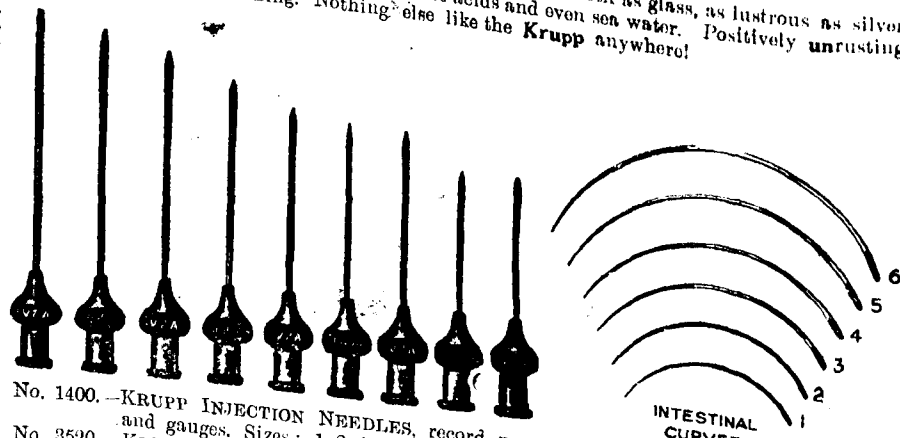
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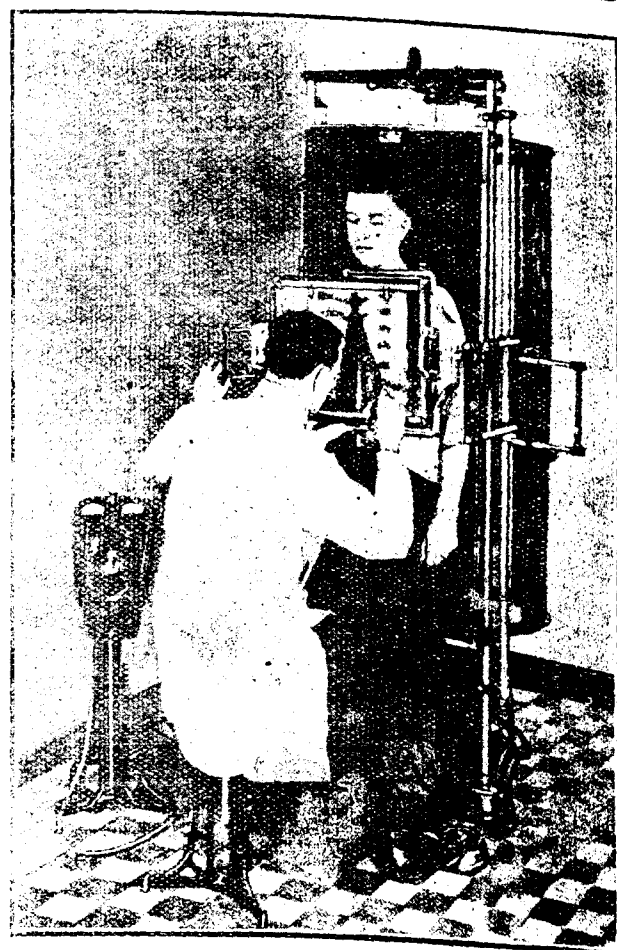
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VOL 30 NO. 7.]

[JULY, 1933.

The Antiseptic

[Estd. 1904]

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PREVENTION AND CONTROL OF VENEREAL DISEASES—A NATIONAL PROBLEM.

BY

S. K. GHOSH, M.B.,

V. D. Department,

Medical College Hospitals, Calcutta.

THE Editors cannot be too highly congratulated on their decision to bring out a special Venereal Issue of The "Antiseptic." They will be amply rewarded if the publication of this issue brings home to us—medical men—the gravity of the situation. By this article, I also expect that not only the attention of the medical men but also that of the authorities and of public health workers will be drawn to the seriousness of the problem.

Why the prevention and control of Venereal Diseases is a National problem? Col. Harrison wrote sometime ago that Venereal Diseases levy a toll on our national resources for which they have a greater claim on our interest. He further described about the condition in his country thus: "it is certain they are likely to be very much more widespread in the near future than they were in the past, when already the inroads which they are making in our national resources, were such as to create considerable alarm."

When we consider the loss of efficiency which can be attributed to gonococcus—the blindness of infants, the chronic ill-health and sterility of women, and the ill-health and impotence of men—and when we think of the foetal and infantile mortality, the loss of labour due to mental and bodily crippling of infants and adolescents, and the losses which the nation incurs through the cutting off of men in the most productive years of their lives, to mention only a few of the economic evils due to syphilis, we are bound to conclude that the combating of venereal diseases is a task of prime national importance." That was the position in Great Britain some years ago and the position in this country is not a bit less gloomy. It is no exaggeration when I say that it is roughly estimated that 15 to 20% of all patients attending hospitals suffer from venereal diseases. It is well known that syphilisation progresses along with the progress of the present day civilisation. From my personal experiences I may say that a considerable number of our University students specially those who stay away from home are victims to venereal diseases, though Students' Welfare Committee of our University may not or dare not mention such fact in their report and these men unless they successfully and completely cure themselves, are surely, destined, though ill-fitted, by virtue of their chronic ill health, to become leaders of men, leaving apart the question of misery they may cause to their wives and children. It is equally curious that these suffering public not only do not insist on proper treatment but do not even make any protest whatsoever for this state of affairs. And even those who apply for treatment, do they receive proper treatment? Is there any state provision worth the name for the treatment of venereal cases? Can we say that the majority of our colleagues—the general practitioners—get proper training during their student life to treat venereal cases, because it is to the general practitioners that these patients first apply for treatment. It is calculated that about 50% of the income of the majority of the medical men in towns, is through these venereal patients.

By social customs and traditions on venereal diseases, a policy of cowardice and the refusal to accept, acknowledge and face disagreeable truths has always been popular with the majority of the people, who seem to believe that if a scandal is denied and buried, it will soon cease to exist. Knowing and appreciating human nature what it is, physiology cannot be modified by denial, nor apathy will limit the spread of these fell diseases. To plead for

general continence and total abolition of sex irregularity as the only prophylaxis for venereal diseases is to admit that we dare not face fact or life as it is.

Every civilised country worth its name has recognised the human failings and the condition of present day life as obtains especially in towns and is facing the problem of controlling the venereal diseases as best as it can. It is almost a crime not to recognise truth when it is known that in very great majority of cases (about 95%) venereal diseases are contagious and spread by direct infection and also the fact that they are the most easily controlled and most wide-spread and with the exception of tuberculosis, probably the most deadly of chronic infectious diseases.

Here is a field for general propaganda for social hygiene workers but the first line of resistance to these diseases can be offered by us, the medical men, because the successful cure of these venereal cases means the controlling and curtailing of so many sources of possible and fresh infection. It is a well known dictum, though Utopian, that if all syphilitics do not have intercourse for five years from the time of infection, syphilis will practically be unknown; so it can be said that if all cases of venereal diseases as they are contracted, present for treatment and are successfully treated, venereal diseases will be unknown in the future.

Provision for treatment of these cases by the state is meagre and in majority of provinces of India, is almost nil. It is a sad spectacle when a seaman presents to a so-called V.D. Clinic in India with international card for treatment, and is told that he cannot get treatment unless he buys medicines for injections.

No better appreciation for the Editors' labour in bringing out this special issue can I think of than, that the above facts are realised by all concerned.

In conclusion I concur with the Calcutta Vigilance Association in their opinion that "the problem is not merely a medical one but a national one deserving of the closest consideration by the Government as affecting the health and welfare not only of the present but of succeeding generations."

PROPHYLAXIS DE VENEREUS.

BY

T. D. MUKHERJEE, M.B., D.P.H.,

Burdwan, (Bengal.)

PREVENTION is better than cure is a saying familiar to most of us ; but I shall not be surprised to find many people to whom the truth of the proverb has yet to be demonstrated. This by itself is sufficient justification for the choice of subject of this article ; and my brother medicos will excuse me for giving my experience on the subject with a view to be of some service through my readers to those who do not very well appreciate that preventive science is in many respects superior to the curative one. The utility of prevention of diseases is not widely appreciated in exactly the same way as the good of the community is frequently given a lower estimation than the benefit of an individual. Unless the people in general of a country are conversant with the rules of Public Health, they lag far behind as a nation and unless an individual keeps his health in a good condition the mass as a whole suffers the consequences. The utility of prevention against diseases should therefore be learnt by every person and the science of prevention should be taught to all.

Venereal diseases are preventable, but it is to be regretted that they are not regarded in that way adequately and the sanitary authorities of this country take very little action to check their spread. Considering both the general and the individual health, the dangers of the venereal diseases are not in the least inferior to other infectious diseases as regards the harms caused by them to the society and the family. They are the greatest scourge of the race. Gonorrhœa controls birth while Syphilis destroys the foetus and thus they themselves are sufficient to extinct a race. Moreover the infamy upon the family which is brought by their appearance is homicidal, the culprits should be known and should be hanged before they proceed further in their action of disseminating the disease. They are again like serpents under the flower. Joyous healthy person shot with cupid dart runs to pluck a fascinating blossom, and Oh luck!—he returns with venom in his blood, to weep throughout his life.

The diseases are known in this country from time immemorial. They have been elaborately described in Ayurvedic books. If civilization and syphilization run hand in hand, then the fact may

be taken to be one of the proofs that India was civilised long ago when other countries of the world remained in the lap of mother Nature.

By the strenuous effort of the modern scientists and by their research works, the science of the causes of diseases and their remedy has been well known to the modern medical men. With the discovery of the cause by Schaudin, the method of diagnosis by serum by Wassermann, the success in treatment with Salvarsan by Ehrlich and the way of prophylaxis shown by Metchnikoff, syphilis has come under the control of medicine.

In our country the diseases may be called prostituta diseases and generally men acquire it first from prostitutes, who are about cent. per cent. infected; and from this source, the diseases are spread to the community. Wives get the infection from their husbands directly and the surviving children out of these parents get it congenitally. Most of the infections are contracted directly and during sexual communion. The Spirochæte of Syphilis generally penetrate the abraded portion of mucous membrane and of skin ; first a chancre on the site and then they enter the body and cause general symptoms of the disease. The gonococci generally invade the urethra of the male and cervix uteri of the female from which parts they spread upwards and then they enter the general system. Indirectly the infections may reach the body through infected towels, barbers' razors, kissing etc.

There were prostitutes in the society in the ages of the immortals ; they are still present and there they will be up to the end of the universe. Society will keep them in and men will indulge in the carnal appetite with them. The diseases are associated with them and they would spread the disease unless special precautions are taken. People should be educated as regards the preventive measures and this is the only way I think to cope with the disease because society will not be able to do away with prostitutes and men wholly cannot be dissuaded from the sexual communion with them.

A growing child reaching the age of adolescence becomes inquisitive about the sex matters. The questions should be answered as clearly as possible but with the least touch of obscenity. Knowledge of sex strengthens morality and checks bad habits. The best way of teaching is to begin with the botany of flowers and to compare the stamen with male reproductive organs and pistil with female reproductive organ. A pollen grain from the stamen reaching the stigma of the pistil grows down the style,

reaches the ovary and the seed is formed. After the marriage, the knowledge of reproduction should be taught in a more elaborate way. After the attainment of puberty a boy should be informed about the normal physiological activity of sexual organs and of the occasional nocturnal emission. If not, this phenomenon would worry him much, may cause a break-down upon the nervous system, and he would enquire about the phenomenon from a bad friend, would learn masturbation and even follow him to a prostitute's house. He should be taught about the danger of venereal diseases if any tendency in that direction is observed in him. A boy attaining puberty should be induced to take physical exercise which would prevent him from leading an idle life with impure thoughts which often excite passion in a youth and lead him to the altar of Venus. Some are of opinion that circumcision is proof against sexual excitement but if other precautions are not taken it is useless. Rich food and alcoholic drinks in excess should be avoided. Parents should keep an eye upon the boy reaching adolescence, but must not be too cautious because suspicious eye often makes a youth stubborn and may make him reckless. For public health purposes, legal restrictions may be necessary. There should be a hospital for Venereal diseases in every town. Every prostitute should be examined and should be made free from venereal diseases by treatment and every person should undergo the treatment whenever they fall a victim to the diseases. Every medical man should notify the diseases and the authorities should take up every case to arrange for their treatment. A man if not ashamed to go to a prostitute's house must not be ashamed to go through a course of the treatment. Every man should try continence and should try to be content with nuptial love. About chemical prophylaxis, Calomel ointment of the strength 33·3 per cent. is the best against Syphilis and Protargol solution of the strength of 2 per cent. is the best for Gonorrhœa. Instead of pure calomel ointment I have all along prescribed the following combination as the prophylactic unguentum :

R

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 „ Oleati — m. xx.
 Lanoline — 3. p.

Just after the coitus the parts should be washed well, a soap would help the cleansing; after that I prefer the parts to be washed

with Hydrarg perchloride lotion; about an ounce of the same in the strength of 1 in 1000 will serve the purpose. The parts should be wiped dry, about half a dram of the protargol lotion should be introduced into the urethral canal with a syringe, but a dropper may serve the purpose and many prefer it to a long cumbersome syringe. It is better to evacuate the bladder before using the protargol lotion which helps the cleaning of the urethra. I know of a belief in some that if after a coitus urine is passed and the genitalia is washed out with the urine and then with water, no venereal diseases would occur. The urine helps to flush away the urethra clean, and also acidifies the channel a little and thereby minimises the growth of Gonococci. The unguentum should be gently rubbed over the penis, scrotum, pubis and the skin of the lower abdomen. This process causes a little irritation over the parts which remain a little tender for a day or two. But the persons who used according to my direction the above chemicals after cohabitation with different women of the town, evaded the venereal diseases, to which they would have been otherwise liable. One should take care that no part of the penis becomes abraded during a coitus which facilitates the entrance of the spirochæte very easily inside the system. This can be avoided if the person be of clean habit and can control too much of excitement. The condoms used in contraception serve the purpose of the prevention of venereal diseases. It prevents contact with the infected parts as well; the urethra is guarded against Gonococci gaining access. These condoms may be well tried where it can be done without any inconvenience. As it covers the whole penis there is less chance of infection. But one should remember that extragenital chancres may occur. Often a chancre is found on pubes and on the skin of lower abdomen or on the scrotum. In such cases condom is a failure. The method should be thus: condom should be used; after the act the parts should be well washed, and the mercurial ointment should be applied over the parts. This process minimises the chance of infection practically to nil. Similarly a woman may use Capote Anglais against infection from a man. The knowledge of contraception helps the prevention of venereal diseases in the sense that some persons would remain satisfied with marital conjugation instead of illicit intercourse. A person has sometimes to resort to illicit intercourse owing to the ill health of his wife, occasioned by repeated pregnancies, or owing to the fear of next pregnancy.

As a preventive measure, a man should be advised as follows:

"Be satisfied with nuptial cohabitation. If you cannot practise continence with moderate food and physical exercise, if you be incontinent and resort to lewdness, go to a druggist shop, order the following prescription to be served—an ointment, a dark lotion, a dropper, and a soap. Just after the coitus or as early as possible, go to the bath room, with soap and water wash out the genitals and the surrounding parts, urinate, wash out well any trace of soap with water, wipe out with a clean towel, with the dropper introduce one dropperful of the dark solution into the urethra and let it come out and finally besmear the whole part with the ointment. This procedure is simple and you would be free from any venereal disease.

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Edited by

DR. U. RAMA RAU & U. KRISHNA RAU, M.B. B.S.

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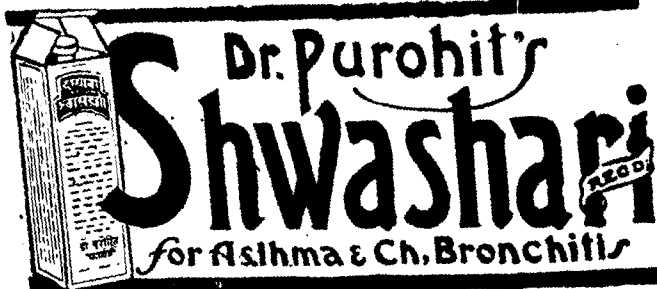
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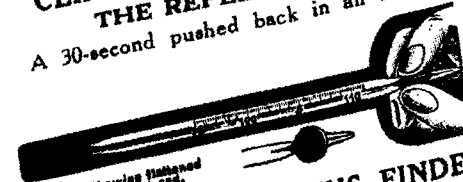
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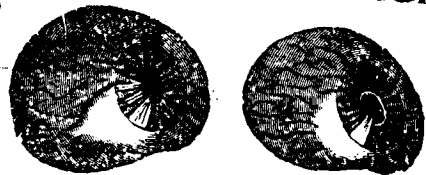
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**PROPHYLAXIS AGAINST VENEREAL DISEASES
IN MEN AND WOMEN.**

BY

CAPT. SHYAM LAL, B.A., M.B.,

(Civil Surgeon, Ballia.)

Ethics.—Some moralists condemn publicity and blame the medical men who try to give it. According to them, a man fears these diseases a great deal and therefore it is a check against immorality and prostitution.

The publicity and the adoption of the prophylactic measures to a certain or greater extent, removes this fear and thus in their opinion it will induce immorality and prostitution and give an impetus to them.

Now I ask them the question that before the prophylaxis was brought about or given publicity, whether the diseases were decreasing or increasing among human beings. You will find that the incidence of venereal diseases is daily increasing and they are playing havoc to the human race; their manifestations are various and not limited to one span of life. Syphilis, if not cured, is passed on by the parents to their children as a legacy, and the children suffer for the wrongs of their forefathers.

Fear of the diseases has not at all sufficed to keep them in check; and hence the publicity of the prophylaxis against such nasty diseases is a necessity.

We have to admit it to our shame that with the advancement of modern civilisation, the venereal diseases have also increased a great deal, so much so that we can say that venereal diseases are advancing pace to pace with the modern civilisation.

Advancement in medical science has been successful in checking and sometimes in rooting out certain diseases as small-pox etc., from certain civilised countries, but all the knowledge has failed to keep the venereal diseases in check.

It distinctly shows that all the moral ideas have failed in checking the diseases and it is high time that we should bestir ourselves and not still remain sleeping under the shadow of false shame and modesty. We must resort to give a general publicity to the prophylaxis against venereal diseases, and also draw the attention of the Government and the local bodies to help the public in giving effect to these measures.

I must further add that with the advancement of civilisation, the incidence of venereal diseases, chiefly syphilis, has not only increased but it has manifested itself in severer forms and in many great varieties.

The cause is simple enough. Civilisation has brought about severe mental and physical strain; and the nervous and vascular systems which are already affected by syphilitic poisoning easily give way under this extra pressure of modern struggle.

Now in order to discuss successfully the prophylaxis against the various venereal diseases, it seems necessary to discuss their aetiology to a certain extent.

The Venereal Diseases are.—(1) Syphilis, (2) Gonorrhœa, (3) Soft Chancre, (4) Granulomata Pudenda.

The last two are of little importance and further the prophylaxis adopted against the first two diseases is entirely sufficient to cover the prophylaxis against the last two. Therefore, I confine myself to the first two diseases.

Syphilis. Mode of infection.—It is contracted through sexual intercourse and it is only in rare and exceptional cases that it is otherwise, and they are as follows:—

1. A medical man may sometimes get infected while operating on a syphilitic patient.
2. Infection may be carried through vaccination and infected instruments through the carelessness of the operator.
3. Wet nurses may sometimes be infected while suckling an infected child.
4. Women may be infected on their breasts by their lovers while suckling or biting the breasts in their libidinous actions.
5. Kisses are not always pure and wholesome and sometimes suffice to carry the infection.

Gonorrhœa.—It is also generally carried by sexual intercourse. Sometimes infected towel, dhoti etc. can also be reasonably blamed. Eyes of new-born are sometimes infected during delivery.

Leaving prostitutes, the incidence of venereal diseases is less common among women than in men, though the female sex is a greater source of infection to the male.

The causes of the above are manifest:

1. Venereal diseases, chiefly Syphilis in the acute stage, are easily detectable in males than in females.

2. Venereal diseases in the acute stage generally cause more troublesome symptoms in males than in females. They only suffer late, when the disease is fairly advanced.
3. Female sex when actually suffering is more apt to hide her condition than the males.

Prostitutes are the chief source of infection so much so that the private parts of a prostitute can easily be defined as the living media for the growth of germs of venereal diseases.

Prophylaxis can be divided as follows:—

- | | |
|----------------------------|------------|
| (1) General | { in man |
| (2) Particular or Personal | { in woman |

General.—Prostitutes should be located in particular part of the city.

They should be examined by the Municipal Health Officer every fortnight. Vaginal discharges should be examined every month microscopically.

Any prostitute suspected or found suffering should be prohibited from having sexual intercourse. She should wear a red ribbon round her arm as a signal. She should not be allowed to carry on her profession until she is medically pronounced "free".

A prostitute should be required compulsorily to allot a portion of her house for anti-prophylactic measures. She should keep soap, clean water, clean towels and calomel ointment of 33%, an irrigator with Pot. Permanganate lotion or Protargal lotion of the particular strength, methylated spirit in a phial; another irrigator with lysol lotion $\frac{1}{2}\%$ for irrigating herself after the coitus.

No prostitutes should be allowed to carry on her profession until she furnishes her place with the above paraphernalia. There should be a public propaganda against the popular belief that one person suffering from Gonorrhœa is cured by committing sexual intercourse with a young boy or girl. The belief is diabolical. A good number of innocent boys and girls are blasted by the pest before they have blossomed into manhood and womanhood.

Circumcision has also been advocated as a general prophylaxis against venereal diseases. It is a very old custom among the Jews and the Mohammadians. It is observed as a religious ceremony.

The question of circumcising all male children in infancy or at least before puberty is one which has been argued *pro and con*.

A good number of present day physicians recommend univer-

sal circumcision, a few regard it as a barbarous mutilation and recommend it only in those cases that require it as in phimosis etc.

However, there is no doubt, that after circumcision (i) the parts can be kept more clean, (ii) the chance for infection of venereal diseases among circumcised people is less than in the uncircumcised, (iii) if infection occurs, uncircumcised people are likely to suffer more from local lesions, (iv) prophylactic measures can easily and more efficiently be adopted among circumcised people.

Comparative occurrence of venereal and non-venereal affections of the genitals among the non-circumcised (Christian) and circumcised (Jews and Mohammadans) classes of Moscow :—

In 7065 uncircumcised persons, there occurred non-venereal affections of the genitals 1108 cases, Gonorrhœa and its complication 1108, hard and soft Chancres 1773, Syphilis with site of the initial lesion undermined 895.

In 412 circumcised subjects, the corresponding figures were 21, 299, 70 and 22.

This gives the following percentage for two classes. Non-venereal diseases of the genitals uncircumcised 15.68%; circumcised 5.09%

Venereal diseases of the genitals in uncircumcised 95% circumcised 36.44%.

The above statistics give circumcision an important position among the prophylactic measures against venereal diseases.

Personal.—*Personal prophylaxis against venereal diseases in men.*

A man suffering from venereal diseases should strictly be prohibited from sexual intercourse with his own wife or any other woman; otherwise he is sowing the seeds which will grow meshes of thorns from which it will be difficult for him to extricate himself. He is also sowing the seeds of suffering and misery for humanity as a whole.

In connection with syphilis, experimental studies support the belief that abrasion of the skin or mucosa is not necessary for the entry of the germs into the body.

The organism soon after the inoculation (probably within 18 hours) leaves the site of entry, being conveyed by the lymphatics to the lymph nodes before the appearance of the chancre.

Consistent with experimental and pathological evidence that the testicle is one of the seats of the election of the syphilitic

virus, our clinical knowledge is that every syphilitic is the potential father of a syphilitic child.

A man just after exposure should adopt the following method as a prophylaxis.

1. Urinate. Urine of a healthy person is sterile, and is a good natural media for irrigating the urethral passage.
2. Wash the parts well with soap and water, and dry the parts with a clean towel.
3. The parts should be washed with 1 in 1000 mercuric chloride solution.
4. One drachm of the calomel ointment should then be thoroughly rubbed on the entire organ for 10 minutes and allowed to remain for twelve hours.

Calomel ointment to be effective must contain 33% of Calomel incorporated in lanolin, and great care should be taken in its preparation, to ensure thorough mixing.

It should be applied during the first hour after exposure. The efficacy of the prophylactic diminishes rapidly as the time between its use and the exposure diminishes.

5. Urethral passage should be irrigated with 20% argyrol or 1% protorgol lotion to be retained five minutes.

Such an irrigation must be made within twelve hours if good chances of success are desired.

The above process is an ideal and a recognised one. It is known to the public for a long time, but its practical utility has not been much. The cause is obvious. It is a difficult process and requires a large paraphernalia, not available easily, and cannot be easily carried about. One indulging in improper ways of sexual gratification cannot be supposed to be running about with an irrigator and fairly big bottle of lotion in his pocket, while calomel ointment is not always very useful chiefly in persons with phimosis or with a large prepuce.

For this I have found out a simple procedure which was published in the "Antiseptic" of April 1930, and its repetition here seems necessary. In this, one requires nothing but a small phial containing methylated or rectified spirit in one's pocket and a little cotton wool or a clean handkerchief.

The procedure is as follows :—

1. After exposure, wash the glans and the genitals with soap and water (if available). Soap and water are also

not entirely necessary as the further procedure will show.

2. Bathe the glans, foreskin, and body of the penis with methylated or rectified spirit. Spirit being liquid will penetrate into all the crevices and furrows of the foreskin. This is the great advantage of using spirit over calomel ointment.

When the penis has not been washed previously with soap and water, the spirit will solidify the discharge sticking to the glans and prepuce which can easily be removed.

This will cause slight irritation and burning sensation about the private parts and nothing more.

3. Now make water; urine being generally sterile will clean the urinary passage. The desire for making water will also be created by the burning sensation and irritation caused by spirit.
4. Now touch the mucous membrane at the external urinary meatus with a little cotton wool or the end of a clean handkerchief soaked in spirit.

Further if there is a strong suspicion of the infection, in the case of syphilis, one should resort to intravenous injections of salvarsan or neo-salvarsan as a prophylactic measure. Two or three injections of the drug should be given on alternate days.

Treatment should be instituted within two or three days at the latest. It is an effective prophylactic against syphilis.

It is not out of place here to give the very early symptoms in gonorrhœa because if one knows their early symptoms and is careful to look after them after an exposure, the disease can easily be nipped in the bud.

A simple process of irrigating the anterior urethra with argyrol 20% or Pot. Permanganas 1 in 2000 or silver nitrate 1 in 1000 for two or three days will entirely stop the further infection in a good number of cases.

Early symptoms in the Prodromal stage are:—Usually the first symptom noted is a tickling or itching sensation indefinitely located towards the distal end of the urethra. This symptom usually appears in three or four days following the infection, but may appear either earlier or later or may not be noticed at all.

The patient, unless educated, will pay little heed to the symptom until it becomes exaggerated into a definite stinging sensation felt particularly on urination. The lips of the urethral

meatus may become slightly swollen and red, and may be stuck together by a small amount of coagulated secretion. Usually not more than one or two days after the first tickling sensation, an exudate or discharge becomes visible at the meatus, and rapidly increase in amount. At first mucus-like, clean and sticky, the discharge, soon becomes purulent. One should be on the look out of the early symptoms after exposure, and if the case is treated before the actual discharge has developed, much trouble and misery will be saved.

PROPHYLAXIS AGAINST VENEREAL DISEASES IN WOMEN.

It is more difficult to apply in women than in men because—

1. The parts are more internal, and cannot so easily be dealt with.
2. The mucous membrane of the vagina is more delicate, and you cannot use as strong an antiseptic as you can do in the case of a man.
3. There is a distinct suction, action of the cervix. However, with all this, it is found that the external parts of the female genitala are oftener affected by the venereal diseases in the beginning than the vagina or the cervix. The cause lies in the vaginal secretion which being acid in reaction, has got an inhibitory action on the growth of venereal germs.

Hence the prophylaxis lies in the following:

Prostitutes and women who expose themselves to infection should generally use check pessaries during the sexual intercourse with a man when they are not sure that he is free from such diseases. They also should not remove the check pessary until they have carried out the other prophylactic measures mentioned below:— They must know that conception brought about through the media of a man suffering from venereal diseases, chiefly Syphilis, will not only cause misery and trouble to her alone, but will be a source of misery and suffering to the future progeny.

2. They should urinate after sexual intercourse.
3. Wash the parts well with soap and water, if available.
4. Bathe the external parts with methylated or rectified spirit.

5. Irrigate the vagina with lysol lotion $\frac{1}{2}\%$ as soon as possible after exposure.
6. Remove the check pessary if kept.
The procedure will be effective at least in reducing the infection in women by 90%.

SEX EDUCATION AND MEDICAL PRACTICE.

BY

S. S. CHOUDHURY,

Prof. of Biology, P. W. Medical College, Patna.

It is said that Syphilis was unknown in ancient India, and if gonorrhœa was known, it was unimportant enough to be placed among a crowd of other diseases with urethral discharges, collectively called the "Mehas" in the Ayurvedic Texts. However that may be, the conditions of the country have changed for the worse since the supposed introduction of the venereal diseases in India by the Portuguese sailors after the discovery of the sea route round the cape of Good Hope. Though perhaps a little less acute than in some other parts of the world, the menace of the V. D. is fast assuming proportions in India that cannot but cause alarm to the public who have imagination enough to envisage the future of the country with this scourge of civilization spreading unchecked.

The number of patients treated for venereal diseases in Government hospitals of Bihar and Orissa was 70,000 in the year 1931. From figures like these one can easily comprehend the wide incidence of V. D. among the masses, a small fraction of which only have access to the Government dispensaries.

One of the causes of the wide diffusion of preventable diseases in India is the appalling ignorance of the masses which only comes next to their chronic poverty which plays havoc in the case of diseases like malaria, kala-azar and influenza. Syphilis and Gonorrhœa are traceable to promiscuous sex relations in 90% of the cases and can be prevented effectively if certain precautions are taken timely. Unfortunately the question of morality crops up when dealing with the preventive aspect of these diseases and Dr. Otto May, M.A., M.D., Secretary to the National Council for combating venereal diseases in England has to resign his office on this issue. He could perceive no valid ethical objection to provid-

ing prophylactic advice to the people who generally expose themselves to this contagion or are likely to do so. So long as it is not possible for the social reformers or the state to do away with prostitution or to make saints of the ordinary mortals, it is difficult to see how the moralist can object to the simple prophylactic measures that have been completely proved to be effective in cent. per cent. cases of possible infection. He should also remember that there is no virtue in allowing the innocent wife and unborn children to suffer for the sins of a man who cannot control his sex impulses. In this matter, education can do much whichever method of approach is selected. There is no reason why we should not benefit by the experience of the wise men of other countries who are now almost unanimous in declaring that under the existing conditions of modern civilization it is highly necessary to provide sane sex-education on scientific lines to the child and adolescent young girl and boy so that they may not fall a victim to prurient curiosity in sex matters and court dangers whose gravity cannot be exaggerated. I can say from personal experience that one found the medical graduates of fifteen years ago completely ignorant of sex psychology and sex education in all its aspects. Some improvement is now noticeable but no systematic attempt has yet been made to make our medical men competent enough to really help the members of the families whose medical advisers they are. The provincial and local medical associations of the country are in a position to move in this matter if they so choose. A central committee of experts composed of medical men, biologists, psychologists, teachers and laymen of liberal views may chalk out a plan of sex-education in all its different grades, draw up model lectures suitable for our primary and secondary schools as well as for colleges. With this as a basis we may hope in time to do propaganda work on the lines of the various societies in western countries who are out to fight and eradicate this scourge of civilization and have attained considerable success in the short time they have been in existence.

There is no harm of course in starting propaganda and vigilance societies along with the spread of sane sex-education on the lines suggested above and there is much scope for work in the big cities and towns, at the country fairs where prostitution of a hideous kind is often a marked feature; in industrial and railway centres, in central police stations and other suitable places where a more or less uniform audience is available for lectures and demonstrations.

Another important aspect of the matter is the suppression of unauthorised advertisement of the so-called cures for venereal diseases which are flooding all our newspapers, as an index of the rapid spread of the evil in the country. Legislative measures may be difficult in this country but a central medical committee commanding confidence of the public and composed of medical practitioners of different schools may invite by general notice all interested in proprietary or patent medicines to send their preparations for tests, chemical and clinical, the results of which are to be published periodically. A list of preparations so invited for trial but refused may also act as a deterrent when given publicity.

VENEREAL DISEASES IN RELATION TO PUBLIC HEALTH.

BY

J. ROY,

Urban Health Officer, Nongong, Assam.

VENEREAL diseases are diseases which arise from the impure sexual connection. They principally comprise:—(1) Syphilis. (2) Gonorrhœa (3) Soft Chancre, Urethritis and other diseases of genitals of minor importance. As syphilis and gonorrhœa, unlike other venereal diseases of less importance, affect vitally the health of the public making the nation quite useless due to their specific poisons when introduced into the human system, we shall deal here with these two important diseases only.

(1) Syphilis is a specific disease of slow evolution caused by 'Treponema Pallidum' (*Spirochaeta pallidi*) propagated by inoculation (acquired syphilis), or transmission through the mother (Congenital Syphilis). In the majority of cases, acquired syphilis is always due to infection of genital organs from impure connection though extra genital chancres are seen in other places of the body as in the lip, mouth or tonsils etc., as a result of drinking out of the same glass or smoking of the same pipe of a syphilitic patient or even by kissing. Other accidental extra genital chancres upon the persons of surgical and midwifery practitioners, wet nurse and relatives of syphilitic child are not infrequently found due to inoculation of the syphilitic virus into the body. The organism cannot enter the system through the unbroken skin or mucous

membrane but some breach of surface is necessary. The disease is infectious in all the three stages namely primary, secondary and tertiary stages and may be communicable from person to person or from human subjects to the animals as higher apes. The offspring of the syphilitic parents often fail to arrive at maturity: the mother may be repeatedly miscarrying in several pregnancies. In some instances a full-term living child at the end of first pregnancy in spite of the syphilitic infection of parents may be born with evidences of the syphilitic diseases. There are many theories how infection occurs in the offspring from the infected parental causes. The length of time during which a syphilitic patient retains the power of transmitting the disease to the foetus is an exceedingly difficult point to determine. The rule is that no one suffering from syphilis should be allowed to marry until the Wassermann reaction has remained negative and he or she has been free from all symptoms for two years and even then it is advisable that a mild course of mercury for about 3 months shortly before marriage should be given. In a few cases positive re-action still exists in spite of such effective treatment but in the absence of all clinical signs it is probable that the risk of marital infection would be very slight. It would be wise however in the case of subsequent pregnancy to put the mother under treatment. The question of transmission to the third generation is one of much interest concerning which many things are to be learnt in the near future.

(2) Gonorrhœa is an infective process due to the action of specific micro-organism—the *Gonococcus* or *Diplococcus Gonorrhœa* and characterised in its commonest form by discharge of pus from the urethra. The acute gonococcus infection with a primary lesion usually urethritis and numerous secondary and systematic manifestations of which prostaticitis, salpingitis, arthritis, synovitis, and endocarditis are most important. The local lesion is too often thought to be trifling but it is likely to make permanent sexual damage to the individual himself. The disease is equally infectious to both sexes. The immediate and remote effects of gonococcus are primary infection, the spread in the genito-urinary organs by direct continuity and various systematic gonococcus infection in the different tissues of the body with a good deal of suffering, endless miseries, ill health and disability. The disease is seen in men and women as a result of impure sexual intercourse, in the new-born from vaginal contamination and in older children by accidental infection. The most important complications of gonorrhœa are iritis, endocarditis, pericarditis, pleurisy, renal and

other visceral infection etc. Regarding the advisability of marriage after an attack of gonorrhœa, the cessation of discharge is not sufficient to warrant such a step. The only safe test is to light up a fresh attack of urethritis by the injection of some chemical irritant e.g. a solution of silver nitrate 1 in 100 and to examine the discharge bacteriologically for the presence and absence of gonococci.

Venereal diseases are widely spreading in all countries and in both sexes. Leaving aside the other countries, the figures in British India are not negligible. In India these diseases are disseminating both to the general public as well as to the armies. These being very shameful and secret diseases, no statistics other than those of attendance at hospitals are available. These have been tabulated below and indicate to some extent the prevalence of venereal diseases in different provinces.

		Cases treated in 1929.		Cases treated in 1928.	
		Gonococcal infection.	Syphilis.	Gonococcal infection.	Syphilis.
United Province	...	25798	40947	24550	139828
Madras Presidency	...	76344	86466	73757	98384
Bombay Presidency	...	22138	34800	21442	35499
Burma	...	20004	30198	19187	29643
Central Province	...	12187	17197	11427	16096
Delhi Province	...	4454	4470	1971	3767
Behar and Orissa	...	28860	45179	29363	44775
Assam	...	6194	2557	5534	2986
Bengal	...	51135	37288	39848	26636
North West Frontier Province	...	1029	3190	953	3095
Coorg	...	278	309	Not available.	
Beluchistan	...	1408	1937	1092	1801
Punjab	...	12561	17416	17154	16496
TOTAL		261390	321954	241278	419006

The group of venereal diseases in the Indian Army in British India in 1929 accounted for admission in the hospitals of which 1349 were fresh infections and 321 relapses. The ratio per 1000 for all admissions fell from 14.4 in 1928 to 13.0 in 1929. The

above figures indicate how actively the venereal diseases are spreading in India.

These diseases are brought about by the specific organisms stated above generally in the genitals of mankind first and then the chain of infection to the other tissues of the body. An attack of venereal disease on a person makes him potentially and actually a weakened member of the community and reduces the productive power of its victim. It causes endless miseries to the persons and inflicts slaughter of infants born and unborn. The attack of these diseases is dreaded with considerable alarm in the national resource as this attributes to the blindness of the infants, the chronic ill health and sterility of women, ill health and impotence of men, foetal and infant mortality. Once any such attack upon human beings always leaves him in permanent damaged condition. The venereal diseases are notorious for their tendency to recur in the spot which is weakened by over-work or injury. This gives a continual fear and mental depression to the sufferers. There is crippling of infected children who are atleast entitled to a fair start in life. The evils of venereal diseases are spreading now very widely in the community in comparison of their appearance in the past, and these will continue to spread more widely on the nation causing a considerable loss and injury to the public health which the nation incurs through the cutting of men in the most productive years of their lives, to mention only a few economic evils due to these diseases, if ere long necessary preventive steps are not taken to keep these scourges under control. The infection of venereal diseases amongst innocent persons and so much greater the unnecessary toll levied by the said diseases are simply due to the fact that the persons are being treated indifferently by the quacks and the diseases are kept concealed. These facts are responsible for the wide spread of such infection. If every member of the medical profession knew thoroughly the simple technique of diagnosis and the scientific treatment of venereal disease and carried it out, if he acted promptly as he wanted in the case of any other infectious diseases, the good result which followed would quickly teach the general public that, in these matters it pays to seek good advice and to follow it implicitly.

At the present time there are various societies which are directly or indirectly interested in the combating of venereal diseases and the solution of the problem which they offer, differs with ideals of the individuals comprising them.

The venereal diseases being infectious diseases, the disinfectant activities are the best medical means by which the chain of infec-

tion can be broken and exterminated ultimately at the very outset after the implantation of the virus on the genitals (or other places).

The gonococcus and *Spirochaeta pallida* are two of the most delicate organisms in existence and therefore easily killed whilst still on the surface. Both of them tend to penetrate pretty rapidly to the deeper tissues where they are immune to attack by simple means. The following illustrates the delicacy of these organisms from the laboratory point of view.

Captain D. Thompson, working in the Rochester Road Laboratory with a culture medium on which gonococcus grew as well as staphylococcus on plain agar, found that cultural gonococci are killed in one minute by:—

1/15000 Pot. Permanganate solution but not by 1/20,000.

1/1250 Pot. Hydrate solution but not by 1/1750.

1/20,000 Pot. Permang. in 1/2500 Pot. Hydrate (unfortunately this solution does not keep).

Schaffer and Stein schneider found, inter alia that gonococci are killed by 5 minutes contact with 1/1000 silver nitrate, 1/2000 argentamin, 1/4000 argonin, 1/3000 oxycyanide of mercury and in 10 minutes by 1/4000 silver nitrate, 1/100 protargol. No growth can be obtained after admixture of 30 p. c. calomel ointment with gonoreal pus for 5 minutes, whether the mixture is intra or extra-urethral. With regard to *Spirochaeta pallida*, Noguchi found that cultures are killed at once by contact with 1/1000 Permanganate of Potas. or 1/5000 perchloride of mercury. The effect of calomel is supported by the classical experiment of Matchni-koff on Maisso-neuve who was inoculated with syphilitic virus at the same time as four macaque. Maisso-neuve and one macaque were energetically rubbed with calomel ointment an hour after the inoculation and neither developed any sign of syphilis. Another macaque was rubbed 20 hrs. afterwards and two not rubbed at all developed typical syphilitic chancres. Neisser showed that plain washing with soap and water after inoculation was effective against syphilitic infection in experimental animals. Clinically 24 hrs. after dressing a ripe chancre with 30% calomel ointment it is unusual to find *spirochaeta* though these abounded previously in the serum exudate.

The facts stated have been applied to the combating of venereal diseases by the armies and navies all over the world.

Early disinfection effects a very definite reduction in the incidence of venereal diseases as shown by experiences below though the results are naturally not so easy to gauge as those of a labo-

ratory experiment for obvious reasons of inaccuracy. For instance it is difficult to state exactly the ratio of attacks to exposure owing to the impossibility of determining the number of the latter. Again when disinfectants have been used, the thoroughness with which they have been applied and the length of time which has elapsed since exposure to infection are very important variants when the results came to be measured.

EXPERIENCE OF THE U. S. ARMY. FRANCE.

- (1) Out of 2,426 consecutive men in a certain station who were treated within an hour and quarter on exposure to venereal infections, only two subsequently developed venereal diseases.
- (2) Compulsory prophylaxis applied to a group of 3,600 men on return of each from pass and limitation of the pass to a few hours resulted in a reduction of the venereal admission ratio from 720 per 1000 per annum to 10.
- (3) The importance of promptitude in application of early treatment is illustrated by the fact related by Lt. Col. H. Young, consulting Urologist to the American Expeditionary Force, that venereal rate of one battalion which allowed frequent all night passes was three times that of a neighbouring battalion where the passes were restricted to a few hours only.

The treatment applied was:—

- (1) Thorough washing with soap and water.
- (2) Washing with perchloride of mercury lotion.
- (3) Injection into urethra of 2% protargol or 10% argyrol retained for 3 minutes.
- (4) Innunction of the parts with 33% calomel ointment.
- (5) Wrapping of the penis in toilet paper which was kept on for 3 hours.

EXPERIENCE OF THE U. S. ATLANTIC FLEET, 1909.

Total number of men allowed ashore	70954.
Total number of men who reported exposure to venereal infection	21116.
Additional which failed to report but developed venereal disease	198.
Total certain exposures to infection	21314.
Total which developed venereal disease	599.
Total treated with some measures of disinfection	21116.

Probable number of these which would have developed venereal diseases if no disinfection had been applied at 2 p. c. risk422.
 Actual number of those who were disinfected who did develop venereal disease401.
 Made up as follows :—
 Disinfected within 18 hours of exposure176. } 401.
 Disinfected more than 18 hours after exposure295. }
 Showing a very distinct advantage in favour of disinfection after exposure even when the measures are taken, as appears mostly to have happened in these cases as long as 18 hours afterwards. May's prevention of venereal diseases shows the experience at the U. S. Naval Station, Norfolk, Virginia—
 Total number who were certainly exposed to infection and received disinfectant treatment within a known number of hours5103.
 Probable number which would have become infected if no disinfectant measures had been taken, at 2 p.c. risk102.
 Actual number who developed venereal disease81.
 These were made up as follows :—

Disinfected within U/M hour of exposure.	Number exposed to infection.	Number who developed venereal disease.	Percentage of infection.
1	1180	1	0.08
2	1172	7	0.59
3	521	4	0.77
4	330	2	0.61
5	199	3	1.57
6	321	5	1.58
7	277	6	4.27
8	390	16	4.22
9	283	10	3.62
10	214	11	5.14
More than 10	216	16	7.40
TOTAL ...	5103	81	1.58

This valuable table illustrates most strikingly the very great value of disinfectant measures undertaken within an hour or two

of exposure. In this station the risk of infection when no disinfectant was applied or this was undertaken more than 6 hours after exposures was considerably higher than the 2% which has been taken as the basis of these remarks.

The following procedure is adopted at the Australian Early Treatment Centre in London :—

After the patient has urinated, the whole genitals are washed thoroughly with 1/2000 Hydr-Perchloride, a small swab of cotton wool soaked in 10% Argyrol and mounted on a match stick is then inserted into the meatus and then retained for a few minutes, following which an injection of 15-20 minims 10% Argyrol solution is given into the urethra and retained for 5 minutes. The genitals are thoroughly inuncted with 30% calomel ointment and a piece of clean linen wrapped loosely round the penis; the man is instructed not to urinate for about 2 hours afterwards. There is another method of a more certain assurance, which runs as follows :—

As soon as possible after exposure to infection :—

- (1) Urinate.
- (2) Wash the genitals, pubes and lower abdomen with soft soap and warm water. Dry.
- (3) Swab the same parts well with 1/2000 hydrg perchlor. paying particular attention to the mouth of the prepuce, corona, and frenum all of which are particularly apt to be abraded.
- (4) Squeeze some semi-fluid calomel or thymol cream into the urethra and finish by inunction with a stiffer calomel or thymol cream.

A woman is more readily infected with venereal disease than a man. She probably suffers little or no inconvenience from the disease and may even be ignorant that she is suffering from it or may be ignorant of the means of preventing her infection from passing to others. Owing to her ignorance she does not care either to protect herself or protect the men with whom she consorts. The condition under which the virus is implanted, favours infection much more in the women than in men. So disinfectant measures are less successful in preventing infection of the women. In this matter women are less approachable and until the disease is thoroughly developed, they never apply for any assistance and thus left almost incurable. If a woman were to wash her genitals and between the labia with 12000 perchloide of mercury and irrigate the vagina with the same solution immediate-

ly after the exposure, it is probable that in most cases she would escape infection but circumstances do not usually permit of these measures. When the disease has become chronic, a woman will not usually convey infection if she takes the precaution to abstain during and for a week after the menstrual flow and to irrigate immediately beforehand with perchloride lotion. Greatest efforts should be concentrated in breaking up the chain of infection viz., after implantation of the virus on the genitals by the preventive disinfectant measures.

If the disinfectant measures have been delayed for some hours and the virus penetrated into the depth of the tissues, abortive and scientific curative treatment should be undertaken in the different stages of the diseases as indicated on the lines dictated by eminent and experienced authorities of medical profession until the patient is thoroughly cured and shows no positive sign of the infection in the body after thorough examination.

As the poison of venereal diseases in the body under certain conditions help in the development of many other diseases both surgical and medical, the earlier that poison is eliminated by radical treatment the better for the nation. The diseases spread more easily in women as they take very little precaution for it. In our country the group of venereal disease is generally seen most abundantly amongst the brothels and through their agency as central focii, the infection is carried all round in the societies. These venereal diseases being very injurious and dangerous to public health and comfort, the disinfectant measures at the very outset will not be quite sufficient and further prophylactic steps against these dreadful scourges will be of utmost importance if to eliminate these from the society and to keep the diseases under control.

A few years before, the Kala-Azar in Assam was a very dreadful disease which had devastating influence on her population with cent. per cent. mortality which at present has been reduced almost to nil. These effective measures were due to the efficient administrative control of the benign Assam Govt. over the disease. Both public health and medical departments heartily co-operated, determined to uproot the evil from the province and adopted the following manœuvre as an anti-kala-azar campaign :—

- (1) Survey of the diseased cases.
- (2) Making the disease notifiable.
- (3) Opening the centres and sub-centres and indoor hospi-

tals for free and early scientific treatment throughout the length and breadth of the province.

- (4) Possible isolation of patients.
- (5) Giving facilities for true laboratory diagnosis, clinical and periodical examinations of patients and of discharging them when quite free from infection.
- (6) Taking all possible sanitary precautions.
- (7) Educating the public minds about the dreadful effects of kala-azar by lectures, distributing the leaflets, magic lantern demonstrations and other means.
- (8) Making compulsion for the treatment of all cases of Kala-Azar and Kala-Azar carriers (not even leaving aside a single one) by legislation.

To protect the nation by holding a control over the venereal diseases, if the measures namely :—

1. General survey of venereal diseases in the country and making the same notifiable. Compulsory periodical medical examination of all public women and other carriers to lessen the risk of infection.
2. Special measures for early disinfection at the very outset of the infection.
3. Enlarging the treatment of the diseases in the hospitals and dispensaries as well as by opening well-equipped centres and sub-centres for scientific diagnosis and treatment of the venereal diseases throughout the length and breadth of the country which is wanting at present with a result of the concealment of the diseases, whereas such diseases when treated by the quacks, perpetual carriers are left behind giving facilities for dissemination of the seeds of the disease with further spread of the infections.
4. Education of the public by all sorts of propaganda works.
5. All other measures such as legislations by the public co-operation with the help of the government on the principles adopted by the Assam Government against Kala-Azar as stated above are adopted, we can hope, to some extent, to achieve success in combating these dreadful and dangerous diseases, to remove this menace from our societies and to save the public health from the evil consequences of the same for

which a very serious and careful attention of the nation is now very urgently needed.

In conclusion I show my gratefulness to Capt. J. M. Sikdar, Civil Surgeon, Nowgong (Assam) for his active help and very valuable instructions on the subject.

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VENEREAL DISEASES AND PROSTITUTION.

BY

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IT is an eternal question as to which came first.

Prostitution is as old as humanity and so are venereal diseases. Both extend into the dim distance of the past and their origin is undiscernable by the scrutinising researches of the historian. Venereal diseases have undoubtedly assumed a menacing magnitude during the last century or two. They are stated to have travelled from west to east but are now equally widespread practically all over the globe. Civilization and Venerilization have been close companions, so to say, and there appears to be irrefutable witness of history in support of this contention.

Problem of Prostitution.—That about 95 per cent. or more of the cases of venereal disease originate from impure contact is an undeniable fact. Prostitution in its varied forms, private public, open or clandestine, is thus responsible for the wide and extensive propagation of these diseases in all classes and sections of the community. As a corollary the physical causation of venereal diseases, as distinct from their bacteriological causation, is inextricably bound up with prostitution.

Both move in a vicious circle and to eliminate the one has proved as arduous and impracticable a task as to eradicate the other. The master minds in every school of life, the statesman, the legislator, the reformer, the moralist, the ethicist, the psycho-

logist, the humanitarian have all hackled their brains to find some feasible solution of the problem.

The problem is protean in its nature and defies attempts at unravelling.

There are three main springs which feed the institution of prostitution.

1. **The economic factor.**—This plays a prominent part. The committee of enquiry appointed by the League of Nations to investigate immoral girl traffic between various countries in the world, was irresistably driven to the conclusion by the sheer force of the overwhelming evidence adduced by accredited organisations and agencies, state and private, in different countries that the large percentage of girls are induced to take to immoral life and barter away their honour, hearth and home, under pressure of poverty and privation. There is incontrovertible proof that in every big town and city where the economic forces produce greatest havoc, prostitution thrives on want and need, both on the part of the victim and the victimised. The enforced widowhood in certain sections of the community, besides other causes which will be discussed later on, derives its main urge from 'hunger' and contributes a substantial quota to prostitution. Similarly enforced bachelorhood due to want of means to support a family pays its heavy tribute to the pernicious institution of prostitution. The fear of rearing a large family in married men, may again betray them into dangerous paths.

There are certain social customs and conventions like dowry, jat-pat (caste) obligations, community bonds which directly or indirectly tax the individual purse to an unbearable degree and thus bar the way to legalised matrimony and drive the youth to seek satisfaction of the natural sexual instinct in undesirable ways.

2. **The Lack of Knowledge.**—or ignorance about sex hygiene, personal as well as public. The boy or the girl grows up to maturity without even the bare acquaintance with sexual matters. He or she gropes about in the dark urged on by what, to all intents and purposes, is a physiological stimulus and falls into pits or strays out into crooked alleys which abound on the path, often under surface cover of 'glimmer and gold,' and more often than not, injures himself or herself physically, morally and socially beyond redemption or repair. Parents and guardians as the natural instructors of the child at home where education should begin, keep silent from false sense of modesty and allow the unwary child to pick up such stray information or misinformation from questionable sources

which mislead him and leave him stranded on the road side in the grip of malpractices. At school the boy or the girl fares no better and it is considered no business of the school teacher to watch or guard the child and instruct him or her to regulate his or her sexual sound life on basis. Manhood remains still stranger to such knowledge with which is bound up the future health, happiness and vitality of the individual.

The mature young man finds himself at sea to drift along as chance dictates, steered by fancy, false friends and imagination and shipwrecks his barge on shoals and rocks that beset the wide waters.

Even to married men, the significance of exposure to infection and its dire consequences may seldom be known in all its bearings. Under the circumstances, the standard of morality being at discount, the impetuous youth, ignorant of the far-reaching and hereditary nature of the infection goes on sowing wild oats, and in majority of cases, unwittingly leaves a legacy of crippled and marred existence to several generations in his family. "Sins of fathers descend on sons and grandsons" is literally true in these cases.

3. The Human Factor.—When all other causes are lacking to account for such cases of lapses, there is what may be termed 'psychopathia sexualis' or delinquency, physical, mental and moral in the individual. The sexual instinct is abnormal or perverted and questionable ways of satisfying the carnal passion are hunted after. The home married life which otherwise leaves nothing to be desired in the way of affluent circumstances, beautiful charming companion etc., fails to satisfy the fad and fancy of the individual. There is a morbid craving for novelty, fantastic manner of living, gaudy dresses, ornamentation, blandishments. A wild goose chase is started for these.

Conclusion.—To ameliorate or minimise the menace of venereal infection in the community, attention will have to be directed to the problem of prostitution in all its aspects which is the main source of propagation of the diseases. The problem is a formidable one and will tax the skill and ingenuity of the best amongst us. As a surmise of the preventive measures, attempts may be made on the lines suggested as under.—

- (1) The economic well-being of the people should be raised and amenities of life made easier and cheaper. Mode of life be made simpler and less luxurious.
- (2) The time-worn usages and cumbersome customs

pertaining to matrimonial life, caste obligations, dowry system etc., be done away with or reduced to the minimum.

- (3) Education of the child in matters of sexual hygiene, personal and public should be started at home and carried intelligently and unobtrusively through the school age and adult life.
 - (4) The knowledge of venereal diseases, their source of infection, harmful effects and injurious consequences be made available to the public at large by means of pamphlets, handbills, lectures, clinical demonstrations and cinematographic show etc.
 - (5) Birth control clinics be started by local or state authorities to teach people economy in rearing families, and disarm them of the fear of heavy load on their meagre purse caused by large families.
 - (6) Educational propaganda should be carried out by medical men and women in their professional capacity to engender healthy frame of body and mind in their patients.
 - (7) To treat cases of sexual delinquency and perverted passion in their very early stages on lines of psycho-analysis and suggestion.
 - (8) The public health authorities in co-operation with the medical profession and public should carry on vigorous campaign against venereal infection.
- The consideration of abortive or prophylactic measures against venereal poison after the exposure is clearly beyond the scope of this article.

VENEREAL DISEASES AND PREGNANCY.

BY

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INTRODUCTION.

SYPHILIS and Gonorrhœa are the two principal diseases in the venereal group. These constitute one of the very abominable and terrible plagues of humanity. In western countries, it is also known as the "Red Plague." Scholars and research workers who have studied the history of this disease, declare that this disease was unknown to the ancients. The learned Astruc opines "that this disease was unknown to ancients, whether Jews, Greeks, Latins or Arabians, nor did it make its appearance in Europe till towards the close of the 15th century." I wonder why Astruc left out Hindustan, I mean, India, from his list. This disease was unknown to ancient India also till it was imported to India by the Portuguese. In South India, especially in the Malabar Coast, syphilis is known as "Pharingipunnu" among the people, which means a disease of the "Pharingi" (Portuguese people were known as "Pharingis" when they first came to Malabar). It is interesting to study the history and spread of this disease in Europe, and other countries.

Its History and Spread in Europe.—It is reported that syphilis spread in a violent form in Europe in the year 1494, the year following the return of Columbus and his party from their voyage of discovery of America. Columbus and his party returned and landed in Barcelona in 1493. It has been suggested that syphilis was described by Moses in Leviticus (Old Testament of Bible) Ch. 13. The loss of hair and white reddish eruption on head, denoted a leprous man; and if we read further on, there is no reason to disagree with the opinion of Moses who describes the case. In Egypt, bone lesions have been found in pre-historic coffins with erosions resembling those in syphilis and for a time they were considered to be due to that disease, but Professor Elliot Smith, the famous Egyptologist, has proved beyond question that the erosion was caused by a beetle. Sir Clifford Albut writing a few years ago, stated that there is nothing to justify that syphilis existed in the Greece-Roman period, A. D. 200. Later, during the decline of the Roman



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Empire, (A. D. 400) when every kind of vicious living and sensual immorality was practised, syphilis was not mentioned and yet some record of the disease would surely have been made, had it existed. From the above, it appears that the history of syphilis dates from 1493, when Columbus returned from America, since when it has always been in evidence. The earliest known treatise on the subject was published in 1496 by a German physician, Joseph Grunbeck. He described it as an infliction from the Gods upon the French and said that it was "a most horrid and terrible prodigy, unheard of, hated and altogether unknown to mortals."

Aetiology.—The micrococcus now known to be the cause of gonorrhœa and called the Gonococcus, was first described by Neisser who in 1879 gave an account of its microscopical characters as seen in pus of gonorrhœal affections, both of the urethra and of conjunctiva. He considered that this organism was peculiar to the disease and that its characters were distinctive. Later it was successfully isolated and cultivated on solidified human serum by Bumm in 1885. Its characters have since been minutely studied and numerous confirmatory investigations rapidly followed, and by inoculation of cultures in the human subject, its causal relationship to the disease has been conclusively established.

Neisseria gonorrhœa (gonococcus or Neisser's coccus) occurs as spheres 0.6 to 1.0 micron in diameter, singly and in pairs in which case the sides in apposition are flattened. It is Gram-negative. These organisms are found in large numbers in the pus of acute gonorrhœa, both in the male and the female, and for the most parts are contained within the leucocytes. The intra-cellular position, which is of considerable diagnostic importance, is lost to a great extent in secretions from chronic cases. In smears made from pure cultures, the arrangement of groups in two may often be less marked than in pus, clusters of eight or more being common.

Neisseria gonorrhœa tends to establish itself deep in the mucosa or in the glands which communicate with the genito-urinary tract after apparent recovery from the disease has taken place. Thus the "healthy carrier" is responsible for the spread of the disease.

Until very recently the microorganism which gives rise to syphilis was unknown. The question of the aetiology was the subject of continuous controversy from the date of the foundation of the science of Bacteriology. In 1905, a German commission was

set up to enquire into the nature of the causative organism of syphilis. It included a number of bacteriologists and pathologists and also a biologist by the name of Schaudinn. Schaudinn working in collaboration with Hoffmann, investigated a number of primary syphilitic indurations and secondarily enlarged lymph-nodes, and in both lesions discovered a spirochete similar to, but easily distinguished from, the spirochetes already known. He failed to find similar microorganisms in uninfected human beings. The microorganism was described by him as "*Spirochaeta pallida*," now known as "*Treponema pallidum*," though the term "*Spirochaeta pallidum*" is also used.

This is a minute spiral-shaped organism, showing usually from six to fourteen curves; the curves are small (each measuring a little over 1 micron), comparatively sharp and regular. It may be said to measure 4 to 14 microns in length, while it is extremely thin, its thickness being only 0.25 to 0.3 micron. In a fresh exudate from a chancre, the organism shows active movements which are of three kinds—rotation about the long axis, gliding movement to and fro, and movements of flexion of the whole body; there is little actual locomotion, and a specimen will often remain in the same field for a long time. The ends are pointed and tapered to a flagellum-like structure. The regularity of the spirals is well maintained. The recognition at first somewhat difficult, has been rendered comparatively easy by the introduction of new methods. The use of dark-ground illumination is of great service in searching for the organism.

Syphilis is diagnosed clinically by the demonstration of the specific *treponema* microscopically by the above-mentioned method, by means of leutin (in the tertiary and congenital cases) and by serological tests. The complement fixation test as applied to the diagnosis of this disease is commonly called the Wassermann test. It has a high degree of accuracy. Many attempts have been made to perfect a precipitation test for syphilis but the Kahn test is the only one that appears to have become standardized and established as an official routine test. It is much simpler than the Wassermann test and it is reported to be as accurate. The diagnosis of syphilis, especially in obscure and latent cases is very important both to the individual and to the race. Marriage of syphilitics can be prevented by a proper study of the serum reactions of candidates for matrimony and thus the transmission from one sex to the other, abortions and infected offsprings may be prevented. This disease unlike other infectious diseases is intimately connected

with one's personal and sexual life. In this article we are concerned with this disease in pregnancy.

The disease in pregnant women.—A pregnant woman is the mother of the human race. She is the carrier of the divine child in her womb. Therefore, if she is affected by this disease, the consequences are terrible, as it will affect the future race and national efficiency. Married women are innocently affected, but the disease does not stop there but is transmitted to the offspring born of such mothers. The transmission to the second generation is one of the most poignant and tragic features of this disease. The offsprings are affected in a variety of ways ranging from premature death in the womb, still-births, children born alive and apparently healthy but developing the disease some weeks later. Even supposing some children escape from all these earlier manifestations and grow up, there are yet two physiological periods in childhood and adolescence when the disease may show itself, namely, the period when the child cuts the permanent teeth and at the time of puberty. Mental deficiency, idiocy, imbecility, deafness, fits, infantile paralysis etc., in childhood also result from syphilis. This abominable disease in parents affect their progeny born and yet unborn. It is estimated by research scholars that venereal disease in 1001 pregnancies result in 172 miscarriages and still-births, 390 diseased children, 229 infant deaths, and only 210 healthy children. Statistics also show that 50 per cent. of the sterility in women is due to gonorrhœa, more than 50 per cent. of the blindness in children is the result of venereal diseases in parents, 10 to 15 per cent. of heart diseases and nearly 15 per cent. of insanity can be traced to syphilis. This leads us to the consideration of congenital syphilis.

Congenital Syphilis.—Dr. John Adams, Medical Officer to the Thavis Inn Venereal Disease Clinics in London for pregnant women, says that "it is a remarkable fact that in large General Hospitals with all their wealth of clinic materials, comparatively few cases of congenital syphilis are seen, the reason being that nearly all such cases die in early life". The congenital syphilis is due to (1) Mixed syphilis, both parents being affected, (2) Paternal infection, father alone being infected, and (3) Maternal infection, mother alone infected.

How it affects progeny.—The syphilitic agent may affect the future child in a number of ways and at different ante-natal stages. It may infect the ovum during conception through the paternal

semen. At a later stage it may either cause relative placental deficiency by obliterating the lumen of the placental blood vessels or it may pass through the placental circulation and infect the foetus. It is probable, however, that infection of the mother after the 7th month of pregnancy fails to infect the foetus, because the placenta is then so strongly developed that it manufactures a special protective ferment preventing the passage of syphilitic organism from the mother to the foetus. Dr. W. M. Feldman estimates that syphilis is the most important cause of ante-natal mortality. Syphilitic infection caused to the embryo, if not treated in time, will result in (1) abortion up to the 3rd month, (2) miscarriage from 3rd to the 5th month, (3) still-birth from 5th to 9th month, or the child may be born alive with syphilitic manifestation or born with a healthy appearance, but with a positive Wassermann blood reaction.

If the mother is infected during the 7th to 9th month of pregnancy, the child will probably be born healthy and with a negative blood reaction and will remain so. The explanation of this is one of great physiological interest and is probably due to some change which takes place in the placenta. Further investigation on this point will be of great interest. Dr. John Adams reports that a patient with a profuse papular syphilitic eruption was admitted in to the hospital and was confined within 24 hours of admission, having had no special treatment for syphilis. The history of the case showed that she was infected during the 7th month of pregnancy and the mother's blood test gave a positive Wassermann reaction and the skin eruption showed she had a general syphilitic infection. The child's blood was tested for syphilis on several occasions and has always been negative. No special treatment had been given and the child has never shown any signs of syphilis. Dr. Amand Routhe in his evidence given before the Royal Commission on Venereal disease in 1913 made out a strong case that in the later months of pregnancy when the placenta is developed, it is supposed, through its chorionic ferments to break up the spirochaetes and to cause them to granulate and render them free from infection. This is one of the many of Nature's efforts to preserve life. We also find from other evidence given before this Commission, that it was estimated that in England and Wales, 27,000 deaths occurred annually during the ante-natal period and in the four weeks following birth, as a result of syphilis. It is reported that there is

no other disease which is so destructive to infant life. 50 per cent. of all untreated syphilitic mothers are delivered of still-born children, 75 per cent. of those born alive die within the 1st week after birth; of the remaining 25 per cent. many die in early childhood and the few who survive are known as congenital or hereditary syphilitic.

The preventive aspect.—The prevention of congenital syphilis by the treatment of the mother during pregnancy is a very important factor. In a report published in the Journal of American Medical Association in February 1926, we find that "the ravages of untreated syphilis were first investigated and it was found that in a group of 65 multiparae, there had been 256 conceptions, but only 114 living children, so great was the death rate before or after birth. Of the living children, many were conspicuously marked with the stigmata of inherited infection. The scheme of treatment for the pregnant mothers consisted of a course of 8 intravenous injections of arsphenamin and 15 intramuscular injections of mercuric salicylate. It was found possible to keep most of the patients keen on their treatments; particularly were the primiparous patients anxious to be cured. The results were very satisfactory. The numbers of infected pregnancies, the still-births, and the deaths soon after birth were all very greatly reduced and the scheme as a whole could be counted a success."

The preventive treatment of congenital syphilis can be divided as follows:—

1. Prevention of infection of mother.
2. Adequate treatment of the syphilized woman before or during pregnancy and it can be prevented by (a) every case of acquired syphilis both in male and female being treated early and completely, and (b) marriage being forbidden until a condition of non-infectivity has been attained. This is possible if a person who has had adequate anti-syphilitic treatment, is free from all clinical evidence, and the blood has been negative to the Wassermann test for two years. Some insist on an examination of the cerebrospinal fluid.
3. It is advisable to obtain a Wassermann reaction in every prospective mother, bearing in mind that an occasional normal pregnant woman gives a positive reaction. In such cases when there is no evidence or history of syphilis, the patient should be observed carefully and further tests should be tried.

4. Every mother who has a positive Wassermann reaction and whose clinical history, or history of miscarriage, still-births, or syphilitic children, shows that she is syphilitic, should receive anti-syphilitic treatment during each subsequent pregnancy. If treatment is thorough, such pregnancies will certainly result in births of healthy children.

5. Every infant born of syphilitic parents should be examined by the Wassermann reaction at regular intervals up to the 2nd year.

6. With a view to preventing late congenital syphilis, all the children of syphilitic parents should be examined by Wassermann reaction and thus a large number of cases in whom the disease is latent or unrecognised should be discovered.

In the U. S. S. Russia, if a pregnant mother is found suffering from any venereal disease, an abortion is advised, if the pregnancy has not continued for more than 10 weeks. Otherwise the Maternity Hospital is notified and special precautions are taken. The result of such care has been that in Moscow congenital syphilis has decreased from 6 per cent. in 1923 to 1 per cent. in 1930. In the towns, most babies are born in Maternity Hospitals and the result of the prenatal care as well as efficient care at birth is that the rate of infant-mortality (under 1 year) dropped from 285 per 1,000 in 1910 in European Russia, to 137 in Leningard, and 128 in Moscow, in 1928. This information has been obtained from a very recent issue of the "New Russia" and therefore it is the latest available. Dr. Beiding has reported that out of 5,000 maternity patients, 0.54 per cent. had definite clinical signs of syphilis and 1.7 per cent. were suspicious. But when the Wassermann test was applied it was discovered that over 4 times this number, viz., 9.9 per cent. were syphilitic.

Dr. Harrison reports that in an investigation of 280 case records of women with no clinical signs of history suggesting syphilis disclosed 40 with positive serum reactions. Doctors Boas and Garumaltov found that 7.7 per cent. of parturients in the Riggs Hospital, Copenhagen, in 1921 were syphilitic as judged by serological and clinical tests. They have traced the result of maternal syphilis to the infant and have related this to the amount and kind of treatment which the mother has received. A system of nameless notification is in vogue in Denmark and therefore they

follow up closely their investigation with its results which are shown below:—

Treatment of mother.	Cases.	S in infant.	Healthy.	Period of observation of healthy children.
1. Untreated	158	157	1	8
2. Mercury before; none during pregnancy	87	87	9	6 months to 15 years.
3. Salversan before; no treatment during pregnancy	15	12	3	
4. Mercury during pregnancy	111	80	31	6 months to 8 years.
5. Salversan during pregnancy	79	19	60	6 months to 6 years.
6. Salversan before; mercury during pregnancy	26	7	19	6 months to 3 years.
7. Salversan before and during pregnancy	7	1	6	1 to 15 years.

They consider as a result of their investigation that the age of infection does not affect the question of treatment during pregnancy, nor does the fact of a continuously negative Wassermann reaction and they cite examples. They quote Bek's case in which a woman infected during infancy gave birth to a syphilitic child 37 years later. As an example of many cases of their own, they cite the following:—

- 1st Pregnancy—no treatment—Infant syphilitic.
- 2nd „ treated „ healthy.
- 3rd „ after treatment for 18 months—
Infant syphilitic.
- 4th „ treated Infant healthy.

They find that if the mother is negative at the end of pregnancy, the infant is less likely to be syphilitic. Thus out of 274 infants born of mothers positive at the end of pregnancy, 207 were syphilitic, while out of 104 born of mothers who were negative but syphilitic, 24 were syphilitic. Another investigator gives the following statistics: Out of 37 syphilitic contracted during pregnancy, only 22 per cent. resulted in living infants and at the end of a year it was found that all of them were dead. Out of the cases in which syphilis was contracted shortly before conception, 36 per cent. resulted in living infants and at the end of the year only one could be traced as living. Out of 41 cases of longstanding syphilis, there were 73 per cent. of living infants.

The effect of treatment was shown in the following. Among those infected during pregnancy and submitted to treatment, there were 34 per cent. of still-births. Among those infected shortly before and treated only during pregnancy there were 80 per cent. of still-births, but none amongst those treated before and during pregnancy or amongst the long-standing cases which were well treated. Infants who survived for 12 months were also far more numerous than in the well treated cases. The treatment was exclusively with injection of sulfarsenal.

The Syphilitic Child.—When a syphilitic child is born it may appear perfectly healthy and may show signs of syphilis for 3 to 6 weeks or for longer, but a typical new-born syphilitic child might be described as "a small, wizened, atrophied, puny, weakly, sickly creature with a senile appearance, likened to a monkey, or a little old man; the skin is flabby wrinkled and of a brownish colour". Another kind of newly born syphilitic child has œdematous limbs and face, and a large abdomen with bad circulation and bluish tinge all over. It appears as if it was going to die in a few hours and will do so if left untreated. Salversen administered to such cases within half an hour of birth has produced miraculous change for the better within a few hours, and they have ultimately recovered with every appearance of becoming fine healthy specimens of humanity.

A syphilitic child usually shows signs of disease, if untreated, during the first month, 80 per cent. before the end of the 2nd month, and practically all before they are six months old.

The above descriptions clearly prove that venereal diseases in pregnancy are very dangerous not only to the individual pregnant woman but also to her progeny. It is a social menace of the first magnitude as ultimately it tends towards communal and racial degeneracy. It is, therefore, an important national problem. Unfortunately in India, we are not able to get enough statistics on the subject. Dr. Williams reports that syphilis caused more deaths than pregnancy toxæmia and as many as those due to complications of labour among women and he also holds that the recognition and treatment of syphilis early in pregnancy constitutes the most fruitful field for the reduction of foetal mortality.

The Problem in India.—In the Imperial Social Hygiene Conference held at Wembley in 1924, Col. Elwes (Late Principal of Medical College, Madras) and Col. Gifford, (Late Surgeon General, Madras) both of whom have had long by experiences in India remarked in their speeches at the Congress, that 50 to 70 per cent.

of people in India are victims of this disease and another I. M. S. Officer is of opinion that 75 per cent. of the women of India suffer from some kind of venereal diseases or other. (Medical Annual 1932). Though we have not got specific statistics on the subject, the estimates of these experienced medical authorities have to be accepted.

We all know that an infected individual more readily succumbs to the invasion of acute infectious diseases than a healthy individual. We should also take into serious consideration, the degeneration, both mental and physical, which parental syphilis infects upon its progeny as it has been proved by recent clinical researches that syphilis poison can be transmitted through even 2 or 3 generations. At this rate, if this specific infection is left uncontrolled, especially in pregnant women, it may lead to the ultimate deterioration of the race. The general public is entirely ignorant about the serious nature of this disease and its far-reaching dangerous consequences, such as, syphilitic insanity, heart, kidney and liver diseases, syphilitic atheroma, apoplexy, cerebral thrombosis, paralysis etc., which account for a good many deaths in our country. All civilized countries are conducting ante-venereal campaign with all their resources at their command and they have established special venereal diseases clinics for pregnant women. Comparatively, very little is being done in India in this matter. On a previous occasion I have discussed in this Journal in my article on the "Need of Ante-natal work in India" the great need for tackling the question of prenatal care of our pregnant women. Therefore it is not necessary to dilate on this aspect of the question. The need for combating the venereal disease in pregnancy is a problem of the utmost importance. "The infected male gives to his newly-wedded spouse, in exchange or her virginity, a poison which may cripple or kill her". A large percentage of the disorders peculiar to women and nowadays generally found among married women, are due to the venereal diseases which those innocent victims have acquired from their husbands. Dr. R. V. Rajam, Venereal Specialist of Madras General Hospital, has remarked in his very interesting article on the subject that "the generative organs in women become gradually involved to their whole extent, the general health suffers and all the functions of the body become slack, they lose the bloom, the freshness and the joy of young womanhood, the house becomes childless, and there is no conjugal happiness. Nor is this all; the children born of such parents may suffer from sore eyes at birth

THE CONGENITAL.

BY

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VERY little was known of congenital syphilis until 1529 when it was first described by Paracelsus; in 1533 Ambroise Pare stated that "infants oft-times conceive the seeds of this disease in the wombs of their mothers and are born infected there-withal." These are the earliest dates traceable; from now on several wrote of this condition, but it is to Sir Jonathan Hutchinson that we owe the first graphic description of one stigma of the disease viz., the notched peg-shaped incisor tooth, which he described in 1861. Congenital syphilis differs from the Acquired Type in that there is no primary lesion either on the genitals or elsewhere in the body. The condition when seen is generalised from the commencement and in consequence it may show symptoms and signs of a secondary stage or have attacked one or more particular system of the body.

The actual mode of transmission, and the exact time infection is conveyed to the foetus are still matters of grave concern, and the question offers a good field for discussion. At varying periods, one after another theory has held the field, only to be turned down for a newer, and what is for the time being considered to be beyond the pail of doubt. Lees states that the maternal source through the placenta is by far the commonest; it has been proved that 90% of the mothers who give birth to syphilitic infants do suffer from latent syphilis, although at a casual glance or examination they may appear to be quite healthy. On the other hand, there are cases where a mother has given birth to a syphilitic infant and has herself no history or clinical sign of infection; in this case the child has probably been infected by its syphilitic father. Regarding paternal transmission, we are up against a stone wall. How then can a father infect a child in utero? Can it be through his semen or not? Regarding this latter question we have the evidence of G. Kertesz as reported by L. W. Harrison in the Medical Journal of 1930. Harrison states that "Kertesz has shown that in latent syphilis, the infection may be conveyed by the sperm in twenty cases with no outward sign of syphilis but strong evidence that the patients had infected their wives. The author

collected the semen in a condom and injected some of it into the anterior chamber of rabbits' eyes. Infection was proved in five cases by histological evidence of the *Spirochæte pallida* in the cornea, and in five others the appearances were strongly suggestive of fragments of the *Spirochæte pallida*." Whether or not, this can be taken as any positive evidence, it is hardly possible to state, as no further experiments of this sort or nature have been carried out. If this were possible, then the infection must take place at the time conception actually takes place, because later on, it is practically impossible as we cannot and must not forget the early closure of the uterine canal by the developing membranes.

It is indeed very difficult to state definitely which is the commonest source of transmission. There are cases on record where twins have been born of a syphilitic mother, and one has shown typical inherited syphilis, while the other was a perfectly normal child. Again there are cases on record where a syphilitic mother has given birth to a perfectly normal and healthy child.

The embryo may be infected at any time during development and the degree of virulence of the infection varies from the grossly diseased child who scarcely survives birth to the child who shows no active sign of syphilis.

Congenital syphilis as has already been stated, has no primary stage. It is always generalised from the beginning, that is to say, the infection permeates through the whole body of the infant before birth, and may involve any organ or system; therefore its effect on the general nutrition and mental and physical development of the infant is more pronounced. Congenital syphilis usually manifests itself in the first three months of life, but other two danger periods in the life of a child are the seventh year and puberty. The clinical picture is very variable. From birth onwards, secondary and tertiary lesions are seen, but after puberty the lesions met with are usually of the tertiary variety.

Skin.—The earliest skin eruption is the bulbous type of Phemphigus, which is chiefly found at birth on the palms of the hands and the soles of the feet. Other rashes may occur, the usual type being the maculo-papular variety on the flexor aspects of the limbs and trunk. These have the usual distinctive colour. Rhagedes at the angles of the mouth are practically pathognomic of congenital syphilis, and are due to a dry eczematous type of rash which leaves scars radiating outwards from the orifices. The late skin lesions are of a gummatous nature and are usually found on the upper and outer part of the thighs; moist papules may also occur.

The skin in general has an inelastic, brownish yellow papery look, due to malnutrition, giving the child the appearance which has been described "Withered old man appearance."

Mucous Membranes. Mucous patches like those of the acquired syphilis may be found and the palate may also be perforated. The latter may occur either quite early or even late in adult life. The tongue may show lesions like those of the acquired form. "In young adults the presence of scars occupying the soft palate, pillars of the fauces, and post-pharyngeal wall with deformity of the parts may be valuable evidence of congenital syphilis, when other signs are absent"—Harrison. These stigmata may be due to acquired syphilis but the youth of the patient usually negatives this.

Nose.—Very early in life the child suffers from a chronic nasal catarrh called "Snuffles". The discharge varies in character and is highly infectious. At a later stage gummatous ulcerations occur, and chronic osteitis with destruction causes a saddle-shaped nose; moist papules may also occur in the nose.

Larynx.—The hoarse cry of the infant is a very typical and definite sign of congenital syphilis.

Dental Deformities.—The milk teeth may show a retardation of evolution or an arrest of growth of their structures. The permanent ones show more definite abnormalities, the chief of which are (1) Hutchinson's teeth, and (2) Moon's molars.

In the Hutchinson's teeth, the free edge of the upper central incisors show a crescent-shaped erosion, the base is wider than the cutting edge and the teeth are usually placed wide apart. When present they are diagnostic of congenital syphilis, but they may be absent in many cases. They tend to lose their characteristics after the age of 20 years. Of much more importance are Moon's molars in that they occur firstly in all cases of congenital syphilis and secondly they are a permanent abnormality. The abnormality is seen in the first permanent premolar tooth and is characterised by a marked doming of the crest due to imperfect development of the central portion of the crown. Because of the two reasons given above, the Moon's molars, if anything, are of a greater diagnostic value.

Eyes.—Iritis with an associated cyclitis occurs. It responds to treatment quite easily, but if left alone it causes impairment of vision due to the formation of synechiae. A much more important affection of the eye which occurs between the ages of 10 to 20 years is Interstitial Keratitis. It usually affects one eye and then

the other starting as a haziness of the cornea, later becoming salmon pink. There is always an associated photophobia. The condition clears up slowly under treatment as it is very resistant, usually some cloudiness being left behind. This tends to recur at times.

Bones and Joints.—Affections of the bones and joints are important both from the diagnostic point of view as well as from the future development and welfare of the child. Of all the affections the commonest as well as the most obvious even to the most casual observer is the "Sabre-bladed Tibia" which is due to a chronic periostitis resulting in the tibia becoming thickened antero-posteriorly. Painful swelling of the Epiphyseal junctions are common early in life, occurring mostly between the third and the sixth months. Later on in life the lesions met with in the bones are of a gummatous nature.

Another early and diagnostic lesion is the syphilitic white swelling or Clutton's Joint. It is usually bilateral, and is painless. It occurs commonly between the 10th and 20th years of life.

Lymphadenitis.—Both in early and late inherited syphilis the lymph glands tend to be involved.

The Urinary system.—The urine may show albumin, casts, and blood. Paroxysmal hæmoglobinuria is very frequent in congenital syphilis, and is itself often caused by it.

Central Nervous System.—Involvement of the central nervous system is very insidious. Juvenile Tabes is the most frequently found, and it comes on usually about the age of puberty. Mental deficiency is quite often present in a case of inherited syphilis.

The Diagnosis of congenital Syphilis.—The clinical picture is by no means typical, and this is because the condition is generalised from the commencement. The points of chief importance are:

- (1) History of miscarriages. In this connection not uncommonly a healthy child may be born between abortions, still births, or grossly diseased children. This may be due to the virulence of infection in either of the parents at the time. In such a case to avoid all future trouble, it is best to examine the other members of the family thoroughly.
- (2) Wasting with wrinkling of the skin in the first few weeks of life.
- (3) Snuffles and the hoarse cry.

- (4) Skin lesions.
- (5) The Wassermann Reaction.
- (6) Defective development and intelligence.
- (7) A child with inherited syphilis is more prone to inter-current infections than a healthy child, and for this reason it is advisable to go into detail about past illnesses of the child, their nature, duration, and the rapidity of recovery. This can quite easily be understood because the young tissues of the child have been placed at a greater disadvantage owing to the poisons of the infection circulating through its body system.

Lees has made an excellent enunciation which may quite well be quoted:—

"In all surgical and medical conditions and in association with all diseases of children it is sound advice never to obtrude syphilis but always to think of it in differential diagnosis".

Prognosis.—The child's outlook on life is very bad indeed, as must have already been appreciated by what has been said above regarding its susceptibility to intercurrent diseases, which might by themselves cause the death of the infant. Those infants who show signs of gross disease at birth scarcely survive the first year of life, but on the other hand the child who shows very slight manifestations of disease when born may be given a chance in life if assiduous treatment be meted out to it; very unfortunately many of the latter type of cases are seen only when some important body structure has already been seriously affected or damaged.

Prophylaxis.—It is of the utmost importance that congenital syphilis should as far as possible be reduced to the least minimum, or else short of this, it should be kept in very good check. In the East, the incidence is very high, and if the death rate of infants could be taken as an index to the incidence of the condition, then the number of congenitals is appallingly high.

The incidence could quite appreciably be reduced if a clean bill of health is insisted on before marriage. Should this not be possible, one might try a different avenue of tackling the problem, I speak of lectures, pamphlets, etc., whereby the community can be instructed about the dastardly effects venereal disease has on their offsprings. Yet another avenue of approach is the provision of more centres of treatment, where adults not only receive free treatment but also free advice. The help of the lady health visitor may quite well be solicited in the battle; I am afraid none

too many of them fulfil their duties in this respect as efficiently as they might. Who else, but they who are permitted easy access into the homes and hearts of the mothers, are able to do more?

What can we do in the cases where marriage and conception have taken place? The only weapon at our disposal is to treat the parents, especially the mother. Treatment if it is to be effective must be started on at once. The pregnant woman should be given active therapy from the commencement of the pregnancy, or else as soon as she is aware that she has conceived and having started treatment it should be pushed on right up till the week before term. This brings then to the subject of treatment which resolves itself into two parts viz:—(1) The anti-natal and (2) Post-natal.

(1) The ante-natal treatment is not concerned with the infant; it resolves itself rather in the treatment of both the parents more particularly the mother. The pregnant mother stands anti-syphilitic therapy very well and one may use either arsenic, bismuth, or mercury. It is always advisable not to adopt dual therapy in the case of pregnant women, as the combined drug administration might put an extra strain on the already over-burdened kidney, for this reason that it is imperative to examine the weight and the urine of every mother each time she is to receive an injection. One point is worthy of remembrance; that is, the earlier the treatment is started the more successful it is likely to be. Lees recommends a dose of .3 or .45 grammes of any of the arsenical preparations weekly for the first month, then either bismuth or mercury for the next four weeks, and after this the arsenical compound again for another month, and so on till the week before term. Lees is quite definite that if antisyphilitic therapy is started before the third month of pregnancy, a healthy living normal child can practically be assured.

(2) Post-natal Treatment.—This concerns mostly the infant after birth. In view of what has been said before, that the clinical picture of inherited syphilis varies from the grossly diseased child which scarcely survives birth to the child who manifests little or no symptoms of an active infection; it must follow then that the treatment must vary. The weak macerated child will not stand the same kind of treatment as the child who appears to be comparatively healthy at birth. The child which is infected stands the treatment if that treatment is given to it in small and frequent doses, say bi-weekly. Either the arsenical or bismuth preparation may be used. The mode of injection to be preferred is the intramuscular route, because absorption is slower and consequently more effective. If, of course, the veins are prominent, then the

first two injections if given by this route will be to the benefit of the little sufferer.

It is of paramount importance that prolonged treatment of all inherited syphilitics should be insisted upon. This seems only fair if one stops to think that the infection when seen for the first time is a generalised one and has permeated the whole of the body tissues. Lees advocates a period of treatment for a minimum of two years, and there after the child should be kept under observation until it reaches the age of puberty. I feel sure that all fair minded and fair thinking colleagues of mine will think this not too long a period, when we consider what it means to the life of the innocent, born in disease.

SYPHILIS AND CHANGES IN PERSONALITY

BY

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SCOPE OF THE PAPER.

WHENEVER syphilis is mentioned in connection with personality changes, the immediate association in the mind of the general practitioner is with G.P.I. It is not surprising that it should be so, not only because the changes in temperament are profound during the course of this disease, but also because the recent spectacular attempts to treat the patients with induced malaria and high fever, have focussed the attention of the public on G.P.I. It is not generally known however, that syphilis can produce behaviour disorders of different types with kaleidoscopic variations, many of which yield to ordinary antisyphilitic remedies. Such an ignorance involves a great danger, namely of diagnosing as G.P.I. any syphilitic psychosis with its implications of fatalistic prognosis and therapeutic indifference.

It is the object of the present paper, to lay stress on the protean manifestations of syphilis with reference to behaviour and from a knowledge of pathology try to account for them. Before doing so however, an elementary knowledge of the physiological and psychological factors underlying personality is essential. The earlier paragraphs will be devoted to their consideration. I have devoted more attention to it than might be thought necessary; but

I have been compelled to do so because only the foggiest notions seem to prevail in the mind of the general practitioner as regards the factors which go to make up his behaviour pattern. The succeeding paragraphs will concern themselves with the influence of syphilis on the central nervous system. Finally the paper concludes with one or two suggestive case reports.

Most of the material for this paper has been gathered from the clinical material available in the Mental Hospital, Bangalore.

I. FACTORS UNDERLYING PERSONALITY.

Man like all the animals above the level of unicellular protozoa, is a colonial organism; his body consists of a vast number of cells, each of which is in a sense a vital unit. His life is the more or less harmonised cooperation of all this vast multitude; and the nervous system plays the main role in maintaining this harmony of co-operation. But the nervous system is itself a vast multitude of cells; it is in virtue of its own integration that it succeeds in maintaining the harmonious co-operation of other organs and functions. The nervous system inherits a certain degree of organisation; there take shape within it by a process of growth, by the momentum of heredity, certain innate integrations, the chief of which are the instincts. Each of these when mature can impel the organism to co-ordinated activity towards some goal of a special kind, the attainment of food, the performance of the sexual function, the escape from danger etc. The unity of a harmonious personality is only gradually and imperfectly attained by the individual in the course of his growing up, a development which takes place in the light of a multitude of experiences, of success and failure, of pleasure and pain; through such experiences the instinct impulses become confirmed in certain directions, and at the same time they are turned away from other objects and other modes of expression. This is the formation of the sentiments, of love and hate, of respect and contempt, of admiration and fear, for various objects. If a unitary personality is to be achieved, the various sentiments must be brought into one system. This higher integration is what we call "character." It is achieved by the development of a master sentiment which dominates the whole system of sentiments, and in a well balanced personality this master sentiment is the sentiment of self regard, taking the form of self-conscious devotion to an ideal of character. If there is more than one master sentiment, such as happens in ill-balanced individuals, sentiments of divergent tendencies such as love of learning

and love of wealth, conflict is inevitable and the way is prepared for a breakdown of personality. (McDougall.)

It is not enough to describe the gradual increase of complexity which takes place in the evolution of the higher forms of life which eventually lead to human personality. We must enquire as to how the necessary variations take place. We believe that evolution does consist in such progressive variations, but neither the original theories of Darwin or Neo-Darwinians, nor even Bergson's conception of creative evolution, in which the underlying spirit of progress strives towards some definite end, but regresses from time to time, fit in with observed facts. But on the other hand the theory of emergent evolution, which was initiated by Alexander and developed by Lloyd Morgan, offers us a fairly acceptable theory. The doctrine of emergent evolution lays down, that when simpler substances combine under certain relationships with the environment, the resultant substance is something unique, which enjoys a quality of its own. This proposition may be applied in both the organic and inorganic realms, to matter, life and mind. Examples of this can be observed in the various forms exhibited by the carbon molecule (diamond, charcoal, graphite) as has been shown so lucidly by Sir William Bragg. Again the various combinations of hydrogen, nitrogen, carbon and oxygen in the organic compounds show the enormous importance of form and relationship in determining variations in substances.

We must regard every personality as an emergent, and in virtue of its emergence, something new and distinct. Every personality is an emergent from a variety of components. These components group themselves into certain categories.

- (1) The various organs and systems of the body and their respective functions. In view of its integrative and controlling function, the nervous system is the most important of these. In the study of personality the other organs and systems are of significance only in respect of their relation to the nervous system, and in so far as they are modified by it and in turn modify its structure and function.
- (2) The component parts of the nervous system itself; especially the grouping of the neurones and their response to stimuli.
- (3) The mental correlates of these activations of neuronic groups.

- (4) The relationship of these mental and physical correlates with the environment, each modifying the other.
- (5) The vaguely understood factors of heredity.

In discussing the bodily functions which go to make up the personality, our chief interest will lie with the nervous system, which integrates and controls the activity of all other systems. Vegetative function, that is to say the means whereby the animal lives, is primarily controlled by the vegetative nervous system which consists of two parts, the sympathetic, and the parasympathetic, which are mutually antagonistic, and by their dual control, regulate the rhythms and activities of the various glands and unstriated muscles. The central nervous system on the other hand presides over posture, locomotion and intelligence. Within the neuronic groups impulses may spread with a greater or less degree of facilitation, or the passage of impulses from one neurone to the other may be more or less inhibited. This facilitation or inhibition will depend to a certain extent on the pleasure or displeasure involved in the experience which results from the activity of the neurones.

This however is not all the story, for in addition we have to consider the factor of temperament, or the influence of bodily processes other than nervous on the activation of neuronic patterns. The recent advance in the knowledge of the endocrine glands has opened up a new approach to the study of temperament, and although other factors than these internal secretions certainly contribute to temperamental changes, they are probably the most important influences with which we have to deal.

While discussing the secretions of the endocrine glands, we have to keep in mind that they act partly directly by their chemical effects in the blood stream, and partly by their action on the vegetative and central nervous systems. Even in this restricted field there are considerable difficulties, because the system of endocrine glands acts as a whole, some glands functioning in harmony and others in opposition, while others again act in harmony in one respect but in opposition in another. Before and immediately after birth, metabolism and growth are governed by the thymus gland which disappears after puberty. The pineal body seems to exert a brake on the development of sex organs similar to that exerted by the thymus and when it is destroyed, sexual and mental precocity are apt to occur. The vexed question of infantile sexuality seems to depend on the relation between the

pineal body thymus and gonads. The pituitary gland exerts an important influence on skeletal growth, carbohydrate and fat metabolism, and above all on mentality, initiative, intellect and imaginative force. Primary and secondary sexual features depend on a proper pituitary secretion. The thyroid gland exerts a profound influence on metabolism throughout life. Its excess is associated with anxiety states, and defect with dulling of mentality and emotional expression. The parathyroids are essential to life and control the calcium metabolism of the body, and importance of this function in the proper maintenance of emotional and general equilibrium is a recognised fact. The adrenal bodies consist of two parts, cortex and medulla. A good supply of this hormone is necessary to be well organised and ready to meet emergencies. Over-development however leads to lack of emotional control and excessive fear; under-development in addition to physical weakness results in a feeble, effeminate type of person. The secretions of the gonads are largely concerned with the development of secondary sexual characteristic. Sexual abnormalities such as homosexuality may depend on abnormal proportions of glandular tissue properly belonging to the opposite sex, appearing in the organism concerned.

It is to be noted that the ductless glands, especially the adrenals and the thyroid are under the control of the autonomic nervous system, stimulation of the sympathetic being practically equivalent to the stimulation of the adrenal and thyroid. The sympathetic and para-sympathetic (Cranial chiefly vagal, and sacral) being opposed to each other, individuals have been divided into two groups the vagotonics, those in whom the para-sympathetic is prominent and sympathetico tonics, those in whom the sympathetic is prominent. The former are dull, indolent, complaining of digestive disorders, and liable to urticaria, asthma; the latter are active, highly emotional, fond of society etc., (Purves Stewart). Jung's differentiation into introverts and extraverts is on similar though not identical lines.

In addition to the above, proper co-ordination of sensory impulses from the periphery and viscera is necessary to prevent false perception which lead to delusions and hallucinations. A balanced personality also implies a healthy imagination; by which we mean the mental capacity to foresee the sequence of events, which depend on a successive activation of neuronic groups. In the ill-balanced individual, while there is a good deal of prospective imagination, it is out of touch with reality; it is not so because of

failure of logic or reason, but because of a distorted sense of value and perception.

Lastly climatic conditions, environmental factors, and what Graham Wallas calls 'Social Heritage' representing the sum of race traditions, ethical, religious and social, which are handed down, from one generation to another help in moulding one's personality. In the succeeding paragraphs we shall try to correlate the pathological changes produced by syphilis with the alterations in personality.

III. PATHOLOGICAL CHANGES IN SYPHILITIC PSYCHOSES.

Pathology.—According to Alzheimer syphilitic affections of the brain show the following anatomical forms:—

1. Isolated gummatous tumours.
- II. Extensive meningitic infiltrations (meningo-encephalitis) with or without gummatous nodules.

(a) Of the base.

(b) Of the convexity.

Cases involving both base and convexity are rare.

III. Endocarditis luetica.

(a) Heubner's endarteritis.

(b) Nissl and Alzheimer's endarteritis of the smaller vessels.

Number II (meningo-encephalitis) is the one most apt to be mistaken for paresis.

A spirochaetal septicaemia may also occur.

It must not be forgotten that parenchymatous and vascular changes may be found in the same brain.

SPECIAL CHANGES FOUND IN G.P.I.

Alzheimer's work is the authority on the microscopic changes in this disease. The following is a summary:—

Blood vessels.

1. Marked proliferation of new capillaries.
2. Increase of elastic tissues by a formation of new net works about the proliferating endothelial cells.
3. Dilatation and infiltration of the adventitial lymph spaces. The new cells are largely made up of plasma cells and a few lymphocytes.

4. Degenerative changes are very common (hyaline) in blood vessels in the upper cortical layers.
5. In the cortex of the paretic peculiar cell forms, Nissl's rodlike cells are uniformly present.

Ganglion cell changes.

1. A great number of ganglion cells are completely destroyed.
2. The arrangement of the ganglion cell groups is modified, that is, cell architecture of the cortex is changed.
3. Rapid degeneration with necrobiotic changes are common.
4. Axis cylinders undergo early degeneration.

Other changes.

1. Marked increase in connective tissue elements.
2. The major portion of the new glia is found in the outer layers of the cortex especially about the blood vessel. A number of investigators have recently reported marked changes in the choroid plexuses. These changes are significant in view of their known function of secreting the cerebrospinal fluid and their hypothetical function as elective filters of the products of metabolism and endocrine secretions.

IV. INTERPRETATION OF THE PARETIC PSYCHOSIS

4. Here we have a disease, afflicting one when at the very zenith of his physical and mental powers, insidious in its onset yet capable of so changing the character in a few weeks that the previously honest, upright, moral, truth loving, sober citizen becomes the votary of every form of vice, sinks to the depths of drunkenness and debauchery and may even stain his hands in blood. But this is not the worst:—all these things would ultimately find their explanation when the disease that was responsible for them came finally to be recognized and in the light of its diagnosis, they would be excused. But it so happens that such a man as I have pictured is generally the guardian of the family exchequer. When this is the case it almost invariably happens that he wastes considerable amounts of money in his debauchery, becomes involved in unfortunate and ill-advised speculations, often at the solicitation of Sharpers who only too well appreciate his poor judgment and gullibility and finally when he has succeeded in hopelessly, entangling his business affairs and plunging himself into debt, he is committed to an institution

and his family only then come to a realization that they are penniless. The pity of it all is that it might have been prevented. (*William White*).

The interpretation of the mental symptoms of paresis may advantageously be approached from two angles; in the first place from a consideration of the personality make-up previous to the onset of the disease process. The disorder of mind must be a disorder of that which existed before and therefore the character of the mental symptoms is directly dependent upon the type of individual. Osnato believes that it is the abnormal types of personality that are more apt to develop paresis following luetic infection. In the second place as an expression of an organ inferiority (cortex) in harmony with the conception of Adler and also with the conclusions of Bolton.

The grandiose type of paretic symptom falls quite in line, in its interpretation, with this concept of organ (cortex) inferiority. The destructive luetic process produces as it advances an ever increasing mental inefficiency which is compensated for in the only possible way because of its organic basis, namely by phantasy. The patient begins to build up delusions of power to compensate for the progressing weakness and these delusions increase in improbability as the destructive process results in increased mental weakness. This pyramiding of the delusions of grandeur (the patient is not only worth hundreds of thousands but millions, trillions, quadrillions, etc., finally having to invent words to express the size of his fortune) goes on and on in a vain effort to overtake the results of cortical (mental) destruction. Real inefficiency is compensated by an effort to think himself efficient; efficiency is sought to be brought about by thinking hard enough that it is really so, results as sought by thinking of them as attained. Hollos and Ferenczi have recently demonstrated that the paretic psychosis is interpretable along psycho-analytical lines.

V. NON-PARETIC SYPHILITIC PSYCHOSES

Their interpretation.

Plaut in a suggestive study classifies the syphilitic psychoses as follows:—

- (1) Simple luetic weakness of mind—generally accompanied by hemiplegia or monoplegia, which may be transitory or permanent.
- (2) Syphilitic pseudo-paralysis—the presence of hallucina-

tions of hearing have great weight in the diagnosis of this form and speak against true paresis.

- (3) Paranoid forms combined with tabes—remaining stationary for long periods, little dementia, rarely delusions of persecution, numerous hallucinations of hearing disturbances of common sensation.
- (4) Paranoid forms without tabetic symptoms, for example with auditory hallucinations and delusions of jealousy.
- (5) Certain epileptic forms, due to endarteritic changes.
- (6) Short hallucinatory confused states.
- (7) Psychotic disturbances associated with syphilitic cardiac disease, observed also as a result of syphilitic aortitis.
- (8) Psychoses resembling manic-depressive psychosis, particularly manic excitement.
- (9) Mental disorder, due to syphilis as a psychic trauma.
- (10) Various grades of weak-mindedness, psychopathic constitution etc.

Diagnosis.—Many of these cases are extremely difficult to differentiate from paresis. Vascular brain syphilis occurs a shorter period after luetic infection, the patient is younger, it is more marked by localizing symptoms, often is associated with severe headaches, which are usually worse at night, and the symptoms with the exception of those due to destructive lesions, may yield to anti-syphilitic medication. A most careful neurological examination is of the first importance.

Amongst the various pathological changes produced by syphilis, two of them arrest our attention. First, the destruction of nerve cells with increased gliosis, and secondly the degeneration of blood vessels with consequent alteration in the blood supply to the brain and viscera. It is a matter of common knowledge that (1) Nerve cells are not regenerated (2) The function of the glia apart from the usual mechanical ones, is to prevent the pulsations of the blood vessels affecting adversely the nerve cells. This increased gliosis may bind down the blood vessels, as well as nerve cells affecting both adversely. (3) The functional integrity of an organ depends on its blood supply. When due to changes in blood vessels, the quality and quantity of the blood supply to the nerve elements change for the worse, is there any wonder that they no longer function properly?

Recently Donaldson has published an interesting article in the American Journal of Psychiatry, September 1932, on "The Brain Problem in relation to Weight and Form." He says the number of cerebral neurons is fixed within biological limits and is characteristic for the species. The vascular tree as represented by the vessels in the pia is better developed in the intellectuals; this means a better blood supply to the cortex. Changes in the amount and composition of the blood serve to modify the activities of the neurons, and it is a fair inference that blood composition may be a significant factor in determining the grade of mental processes, an eloquent testimonial to the ravages of syphilis.

The pathological changes in the ductless glands due to syphilis have not been completely worked out. But it is well known that they undergo degeneration and their blood vessels share the same fate as others. Being intensely vascular organs, their efficiency is proportionately diminished, with consequent alteration in the quality and quantity of their secretions. This is bound to react on the behaviour pattern.

Lastly man's sense of well being, his sense of proportion and values depend on proper co-ordinated sensory impulses from the viscera and the periphery. Partly due to the changes in the nerve elements, and partly due to changes in the viscera themselves, these sensory impulses are no longer normal and this disorderliness leads to false perceptions with consequent hallucinations, auditory and visual, and distortion of values and behaviour. Sometimes one doubts whether in every case of syphilis associated with behaviour disorders, there are organic changes in the nerve elements. Many patients with profound behaviour disorders of varying types, calu down and regain their balance in a very short time under anti-syphilitic treatment. In such cases, may it not be that the disorder is due to a sort of toxæmia of the frontal lobes, they being correlated with man's psychic life—analogous to the nephrosis of the kidney? Of course it is purely a speculation, a speculation which could neither be proved nor disproved.

VI. SYPHILIS AND CRIMINAL RESPONSIBILITY

There is little doubt that syphilis predisposes the victim to psychopathological states of mind, during which complete or partial loss of memory may be common. During this amnesic period, crimes may be committed in such a state of disordered consciousness that no trace was left in the memory. The characteristic

form of criminality in syphilis whether parietic or non-parietic is acquisitive crime, such as theft, petty larceny, but never such grave crimes as fraud, burglary or forgery. Generally the circumstances and execution of the offence show a supreme silliness: he will steal an object of no possible value to him, and he will take it in the presence of the proprietor or a policeman. The predominance of the instinct of acquisitiveness is evident in all stages of the disease, and the more elaborate crimes referred to above are linked by cases intermediate in complexity to the more simple expressions of the impulse—the automatic theft and the rubbish gathering of advanced dementia.

In contrast with crimes of acquisitiveness, homicidal offences are very rare in neural syphilis. Sullivan considers that the cases of homicide in syphilitic psychoses can be grouped under three heads in their order of frequency:—

(a) Those in which the criminal act is incidental to the pursuit of an acquisitive, or at all events an expansive end.

(b) Those due to an excessive reaction against external resistance or irritation.

(c) Those which depend on a primary homicidal impulse. It is notorious that in neural syphilis, at any rate in G. P. I. the emotional tone is one of unbounded optimism; and if the emotional tone becomes depressed or melancholic it is usually an indication of concomitant visceral disease. The primary homicides are recruited from the latter class. In the great majority of syphilitic psychotics, the disease is typical of years of fullest vital activity and during its earliest stages at any rate, the visceral function is normal. This state of vigorous organic function is reflected in the optimistic mood, and also in the disorders of conduct and of thought which go with that mood, that is to say in crimes of acquisitiveness and in delusions of exaltation.

In spite of their claims to great physical and sexual power, to many beautiful wives and numerous desirable lovers, the sexual offences of these patients are of a very minor character.

VII. CASE REPORT

The following case report is illustrative of many of the points raised in the above discussion.

Muniyappa, aged 45, merchant, was admitted with a history of being off his head for six years. The first change was noticed

when he started in buying quantities of useless material. He would change with amazing suddenness his business of dealing one article to another, almost always buying inferior useless articles above the market rate, in the grandiose hope of there being a shortage. In his family relations also he changed from a loving husband to a tyrant. His moods would alternate between sudden elation and sudden depression. More than once he was found stealing articles of no value such as rags, paper, and spoons in the presence of the owners themselves, a doll from his child and a plate on which he was served rice in the presence of the host himself. He was sleepless and very dirty in his habits.

On examination he appeared weak and exhausted, heart sounds rapid, tongue thickly coated, constipated, teeth dirty, urine normal. His cervical and inguinal glands were enlarged and shotty, scar on the penis, reflexes exaggerated, upgoing toe, sluggish pupils, no A. R. signs of retrobulbar neuritis; clearly a typical multiple lesion. His Wassermann both blood and C. S. F. were triple positive. His sensation could not be examined in the earlier stages on account of his mental condition. In his lucid moments it was normal.

His consciousness was clouded, completely dis-oriented, wandering attention, depressed, psychomotor activity diminished. There was no rigidity and sphincters were normal. Lange's colloidal gold reaction was not typical of G. P. I. The diagnosis was of neural syphilis, perhaps meningovascular. He was put on heavy doses of potassium iodide, bismuth iodol, and Salvarsan. Due to the eye condition no tryparsimide was tried. Lumbar puncture did not reveal any heightened pressure. C. S. F. was clear and cell count was ten for field. All of a sudden he developed hemiplegia with aphasia. It cleared completely within three days. He would develop sudden rigidity of the limbs which would as suddenly clear away. For days together he would be lying absolutely helpless in a semicomatose condition and as suddenly leave his bed and would talk rationally. This state of affairs continued for nearly a period of six months and he passed away in one of these semicomatose conditions, in spite of all that could be done, a victim to the many-faced, apparently contradictory, monster of syphilis.

VIII. CONCLUSION

We have come to the end of our trail. Civilization is syphilization—a trite saying which sums up the increase of syphilis under conditions of city life. Commerce, transportation, the big cities, are in league with prostitution to bring about syphilis. It is said

that industrialization, and especially of women increases it. Even more than soldiers and sailors do waitresses, sales women and sales men have these diseases. Wherever greater freedom exists, wherever there is less regard for conventional morality, there is a greater increase of syphilis. If syphilis is a detrimental influence injuring the race, then no matter whether or not conventional morality is justified on ethical grounds, it is justified on hygienic and eugenical grounds. Free love fosters free syphilis (Myerson).

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FEVER AS A SYMPTOM OF SYPHILITIC INFECTION.

BY

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THE frequency of rise of temperature with all the attending phenomena clinically called fever is variable in all the stages of syphilitic infection. The rise of temperature may be slight or may be continuous or intermittent resembling many other general infections like malaria, typhoid, tuberculosis or septic infection.

Incubation Period and Primary Stage.—There may be a slight rise of temperature with weakness, headache and pain in the limbs. This may be mistaken for rheumatism or if there are chills for malaria. If there is sepsis accompanying the enlargement of glands and chancre there may be septic type of temperature.

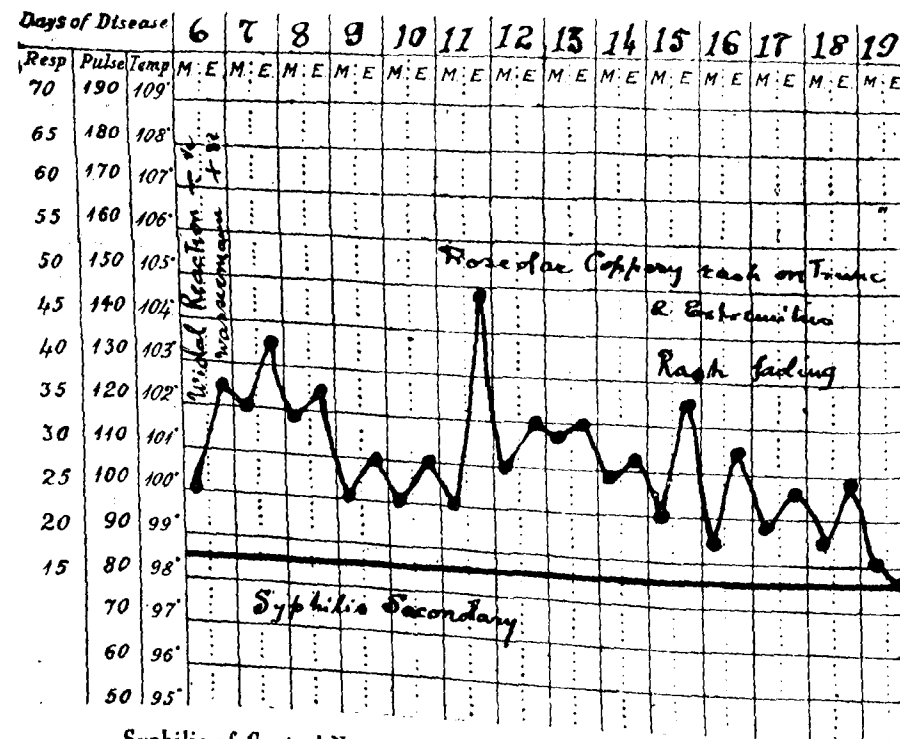
Secondary Stage.—Fournier describes the fever in this stage as of various forms and is present in 20 to 30% of cases. It may begin with chill a week or two before the appearance of eruptions and may be remittent or intermittent. The former is described by Fournier as typhus syphilitique when continued for a long time with features resembling typhoid fever. If accompanied by chills the latter type is diagnosed as malaria in temperate and tropical countries. If there are pains in the limbs and joints it may be mistaken for rheumatic fever.

If there are eruptions then the cases are diagnosed as small-pox, chicken-pox, measles, typhus and other eruptive fevers.

Tertiary Stage.—Continued fever of any type may occur in this stage and specially when the liver and bones are affected with gummata or when there is syphilitic involvement of lungs. As in the secondary stage, obscure fever in this stage also may be mistaken for malaria, rheumatic fever and enteric fevers, but the history of infection, presence of characteristic, symmetrical, copper-coloured eruptions, gummata and nodes and positive Kahn or Wassermann and absence of the usual features of other diseases make the diagnosis clear. When there are signs of lung involvement with fever, cough, sweats and wasting, the diagnosis of pulmonary tuberculosis is made, but the course of the disease

and absence of tubercle bacilli in the sputum exclude this disease.

Case.—A.J.P., male 29 admitted for high continuous fever and pain in the joints for about a week. Widal was negative and Wassermann positive. No history of initial lesion could be obtained. Patient developed roseolar coppery rash first on face and then all over the body and extremities more marked on the flexors of arms and lower extremities. He was put on antisyphilitic treatment and the rash disappeared.



Syphilis of Central Nervous System.—In these conditions also there is a rise of temperature and febrile symptoms either due to vascular changes, hemorrhage or gummatous and general inflammation of the brain tissue. But here fever is only a symptom accompanying many other protean manifestations of this later stage of the disease.



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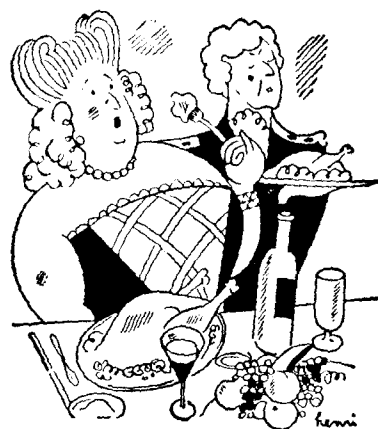
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DISTINCTIVE FEATURES OF SYPHILIS IN THE FEMALES

BY

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SYPHILIS in the females is not so well described in text books and not taught with so much emphasis in medical schools and colleges as the same disease in the males. But there are important differences of this one and the same disease in the two sexes which cannot be overlooked and which should be well known to all students and practitioners of medicine.

In the present paper, I shall endeavour to point out these distinctive features and I intend to consider them under the following main headings:—

- I. The underlying causes of differences in the two sexes.
- II. Differences in the clinical manifestations
 - (A) In the primary stage,
 - (B) In the secondary stage,
 - (C) In the tertiary and late stages,
- III. Serological differences or peculiarities.
- IV. Far reaching effects of syphilis in the females, on the progeny.
- V. Treatment of syphilis in women.
- I. **The underlying causes of differences in the two cases.**—The differences of syphilis in the two sexes are marked during the period of sexual activity in the females, i.e., from the commencement of menstruation to the menopause.

The underlying causes of such differences are:—

- (1) *The anatomical peculiarities of the parts where manifestations of syphilis occur.* As for example the external genitalia of the females are different from those of males in the texture of the tissues. They are also more liable to remain moist, to accumulate dirt and to undergo friction at places than the external genitals of the males. So sores, eruptions,

and inflammatory reactions in external genitals are not identical in appearance in the two sexes.

(2) *Functionally active ovaries* in females.

(3) *Occurrence of pregnancy* in females.

It is believed by some that the *internal secretion of the ovaries* and the *chorionic hormones* have some protective action by which cardiovascular syphilis, neurosyphilis and parasyphilitic diseases are less common in women than in men. These protective agents modify the serological tests (*e. g.* Wassermann's reaction) also.

(4) *The comparatively easy life*, free from violent muscular strain usually led by the fair sex. This obviously lessens the chances of some syphilitic cardiovascular manifestations at least *e.g.* aneurysm etc.

Over and above these a *fifth cause* is pointed out by some European and American writers viz., spare use of alcohol by the females. But this I believe does not hold good in many places of India if not in the whole of it. Here the vast majority of our patients come from the prostitutes who habitually indulge in alcohol to an excess.

II. Differences in Clinical Manifestations.—The clinical manifestations of syphilis in the females differ from those of the males to some extent at least in all stages of the disease.

(a) *In the primary stage.*—In the primary stage, the *primary sore* is often missed. Several reasons can be pointed out for this. The sores may be *small or painless, hidden in folds, evanescent* or may occur in *areas not usually searched for e.g. cervix or anal margin* or they may present atypical characteristics.

Thus the characteristic text book features of the true Hunterian Chancre which we find so often in males are rarely seen in females. It is more often the *exception than the rule* to find a characteristic Hunterian Chancre in a female.

In the labia and areas near about, the primary sore is sometimes so greatly *changed by septic processes* that naked eye diagnosis of their nature is more often impossible than possible. So the golden rule for diagnosis should be that all ulcers, superficial or deep, hard or soft, should be microscopically tested before pronouncing the final verdict.

The primary sore may be *multiple* in several cases. It may appear as *symmetrical ulcers* inside the labia, no matter whether they are surrounded by induration or not. *Absence of induration*

is not at all rare. But if instead of induration around the sore there is brownish red *indurated oedema* of the parts, then it is almost diagnostic. The primary lesion may also appear as an *indurated fissure* near about the anus or the posterior commissure or as an erosion in the vagina or as a *raised eroded area* on one or both lips of the cervix.

Occasionally the primary sore may appear in a far distant area *e.g.* the breast. Here an *indolent ulcer* or a *thick hard crack on a nipple* may be the manifestation of the disease. Confirmatory help however comes from the early shotty enlargement of the axillary lymph glands.

Additional difficulties arise from the following facts:—

- (1) The *incubation period* is often impossible to ascertain because, very often, the woman herself is ignorant of the time of infection.
- (2) *Enlargement of the inguinal lymph glands* is not a constant feature in females, unlike males. If the primary sore is in the vagina or on the cervix, then there is no such enlargement.
- (3) Aberrant cases of *cartilaginous induration* on cervix, labia and meatus have led to a *mistaken diagnosis of cancer*. Such cases may even require excision and histological examination to settle diagnosis.

The strange variations of primary sores in females are well expressed in the following lines quoted from Tice.

"Too much emphasis cannot be laid on the morphological variability of the chancre. A chancre may look like almost anything, and occur almost anywhere on the body except the hairs, nails and teeth."

Over and above what has been said about the sore itself, there are differences in the scar also. The primary sore leaves persistent and characteristic scars in men. But in women this is more often an *exception than a rule*.

(b) *In the secondary stage.*—In the secondary stage of syphilis in females, the signs and symptoms may go unnoticed. This is so, because.—(1) many women do not get rashes at all; (2) others get *mild, evanescent* and quickly fading eruptions which go unnoticed or are taken for something innocent in nature.

The most prominent lesions in females in this stage are:—

- (1) Big flat condylomata seen near external genitals, anus, thighs and buttocks. As these areas are moister and

have more numerous and deeper folds in females than in males, retention of secretion and dirt and consequent increase in size of the lesions occur.

- (2) Moist papules—seen often under the mammae especially if these are pendulous.

A very suggestive sign in this stage is diffuse pain and tenderness in both breasts.

An almost pathognomonic sign to which pointed attention has lately been invited by Dr. J. Abraham of the London Lock Hospitals is "*Leucoderma Colli*" or "*Leucoderma cervicis*" or the "*collar of Venus*" as it is called. It is seen in the neck and shoulders sometimes spreading up to axillae as an irregular mottling with white areas surrounded by irregular dark pigmented borders. It seems to be almost peculiar to women, is very persistent and is often present though often over-looked. Among Indian patients it is rather difficult to detect in dark-skinned subjects. In pre-Wassermann days it was a valuable diagnostic sign.

All other cutaneous syphilitic eruptions are milder and more fleeting in women than in men. As a rule, fever, anæmia and failing health are more common in females, than in the other sex. An obscure cachexia in a young adult female is always suspicious—calling for thorough investigation. The so-called latent syphilis is particularly common in women. It is well known that alopecia and repeated abortion or miscarriage or still-births are some more features, highly suspicious of syphilis.

(c) *In the tertiary and late stages.*—In the tertiary and late stages of syphilis gumma or gummatous ulcers may occur near about the vulva and may simulate cancer. The following features help differentiation of the two conditions:—

- (1) Gummata have better defined outline.
- (2) When ulcerated, the ulcers look indolent.
- (3) They show hard areas of unbroken tissues covered with healthy epithelium.
- (4) There are other evidences of syphilis in the patient.
- (5) The Wassermann reaction is usually positive.
- (6) Gumma quickly responds to anti-syphilitic treatment.
- (7) They show no sign of cancer on microscopic examination of tissue fragments.

Tertiary lesions are also more frequent in cervix than is generally supposed. Here also gumma and gummatous ulcers occur. These lesions are often firm in consistency, painless, and with blood red or mucopurulent discharge. The characteristic colour is yellow. If this colour is present it is very suggestive. But it may be absent. Not infrequently these lesions are confused with cancer. The most tricky problem is when cancer occurs in a syphilitic subject with positive Wassermann reaction. Dr. Gellhorn points out the following as aids to differentiation of the two conditions:—

- (1) Consistency—The examining finger can break into the tissues in cancer but not in a gumma even if it be softened by necrosis.
- (2) Therapeutic test—Two weeks anti-syphilitic treatment will appreciably reduce the size of a gumma but not of a cancer.
- (3) Situation—An ulcer or growth at some distance from the external os is almost certainly syphilitic.

Two other complicated possibilities should be borne in mind:—

- (1) A syphilitic lesion may turn cancerous.
- (2) Syphilis may aggravate symptoms of gynæcologic affections or it may produce gynæcological symptoms as metrorrhagia or amenorrhœa etc., in the absence of any local lesion.

In such cases no straight road to correct diagnosis can be pointed out. Thorough examination, critical judgment, nice discrimination and remembrance of all possibilities help a good deal.

In the breasts, tertiary syphilis may cause:—

- (1) Circumscribed gummata—But these are rare. They may simulate scirrhus cancer. They may be diagnosed from cancer by—
 - (a) The tendency to soften at the centre instead of hardening.
 - (b) Absence of pain.
 - (c) Quick response to antisyphilitic remedies.
- (2) Diffuse gummatous hardening and enlargement of both breasts. It is almost painless and responds to anti-syphilitic treatment.

Tertiary lesions are particularly common at the menopause. In many cases it is then only that the correct diagnosis of the disease is first made.

Of the other late manifestations of syphilis, *cardiovascular lesions are decidedly less frequent* in women than in men. This is probably because their occupation usually demands less physical labour than those of men.

Parasyphilitic diseases of the nervous system as Tabes, general paresis etc., are much less common in women than in men. This is *not due to* any diminished permeability of the central nervous system of females to the virus as has recently been proved from the results of Wassermann reaction of the cerebrospinal fluid in the London Lock Hospital. It is believed by some that functionally active ovaries and pregnancy have some protective power. Perhaps the internal secretion of the former and the chronic hormones of the latter are the protective agents.

Besides the manifestations noted above, various sorts of *puzzling skin eruptions, swellings, ulcers etc.* may occur in the tertiary stage and if the Wassermann reaction is negative as it is not infrequently is in 30-40% of tertiary cases, then the only easy way to diagnosis and treatment is by *antisyphilitic therapeutic measures.*

III. Serological peculiarities of syphilis in females.—The following types of cases deserve notice:—

- (1) Some cases give a doubtful or feebly *positive* result *during pregnancy.* This becomes *negative* just after labour; such cases are often not syphilitic. But if 48 hours after a provocative injection of 0.3 grammes of Novarsenobillon, the Wassermann reaction becomes strongly positive or if repeated examination in different laboratories shows persistently positive result then such cases are to be considered and treated as syphilitic.
- (2) Some cases show a positively *negative* Wassermann reaction *during pregnancy* which becomes *positive* just after delivery. In such cases the chorionic hormones probably inhibit the Wassermann reaction.

So it appears that a pregnant female with definitely positive Wassermann reaction is syphilitic but the converse of it is not necessarily true. This fact deserves careful consideration in the treatment of pregnant females.

- (3) It is also worth remembering that *30 to 40% of females* have a *negative* Wassermann reaction in the *tertiary* stage of syphilis compared with 20-25% negatives among *males* in the same stage of the same disease.

In all cases both male and female, the state of Wassermann reaction of the cerebrospinal fluid is a *very close index* of the activity of syphilis in the central nervous system.

Of the flocculation tests, Kahn and Muller's tests have proved reliable. But of all known tests the negative value of Kline's test is said by some to be the most reliable. A negative *Kline's Test* is *more dependable to exclude syphilis* than a negative Wassermann reaction.

In connection with serodiagnosis of syphilis every doctor *must remember* the sound advice of the great authority Col. L. W. Harrison. It is as follows:—

"The moral for the clinician at present is to accept no result obtained in a laboratory not known to him but to have the test repeated."

IV. Far reaching effects of Syphilis in the females.—On the progeny:—

A matter of the greatest concern is the effect of syphilis on the progeny of the female sufferer. A female who *once* had syphilis may produce a syphilitic child *at any time* in the reproductive period of her life. Prolonged treatment or absence of clinical signs or negative serum test or birth of spotless babies *never* indicates that *all* the future babies will be free from syphilis. This fact deserves serious consideration during proposals of widow re-marriage.

Generally speaking the chances of a woman having a healthy child if infected during pregnancy may be expressed as follows:—

- (1) If infection occurs after the 7th month of pregnancy, child will escape.
- (2) If infection occurs between 5th-7th month—60% chance of escape.
- (3) If infection occurs before 5th month of pregnancy—it will be infected (McDonagh).

A woman who *once* had syphilis has the *best chance* of having a *healthy* baby if she is treated all through *each* pregnancy as a *freshly* infected case.

Treatment should be commenced in the *first half* of pregnancy.

Most workers agree that infection of the foetus does not usually occur before the 4th or 5th month.

Klaf-ten and Priessel have shown by radiograms how repair occurs in foetal syphilitic osteochondritis under antisyphilitic treatment of the mother.

There is one important fact about the new born baby itself. A child born of a woman who once had syphilis may not show any sign of the disease at birth. Whether the seemingly well child is *actually well* cannot be answered by short postpartum observation but can only be done after the critical years 7th and 14th, 2nd dentition and puberty are safely passed.

In this connection 2 new diagnostic aids to congenital syphilis are worth mentioning:—

- (1) Exostosis of the sternal end of the clavicle is believed by G. Higonmenakes as a reliable sign.
- (2) S. Mclean holds that radiographic study is an accurate and sufficient diagnostic method of congenital syphilis in the first six months of life.

V. Treatment of syphilis in women.—This differs very little in the two sexes. Usually women require smaller doses not because of their sex but because of their lighter body weight. Usually half a gramme of novarsenobillon per stone of body weight in each course should not be exceeded. Individual single dose should not exceed 45 gramme of N. A. B.

Recently the following measures have been recommended to lessen chances of toxic effects of arsenical preparations (like N. A. B.):—

- (1) Solution of "914" in the cholagogue Dehydrocholate of soda (5 c.c. of a 20% solution).
- (2) Injection of the drug to patients about 2 hrs. after a good square meal.

This is based on the observation of Craven that starvation is a very important factor predisposing to liver-damage by arsenoben-zol compounds and fat fed animals especially suffer the least.

The best combination of antisyphilitic drugs is arsenic with bismuth. Arsenical preparations *only* are *not* advisable. Some authorities report Wassermann fast cases of cerebrospinal fluid among patients treated with arsenic only.

Mercury is not so well borne by women as bismuth probably because the former is more *nephro-toxic* than the latter. This is to be remembered in treating pregnant females particularly.

Antisyphilitic drugs as a rule have *no marked abortifacient effect*. Bismuth given intramuscularly does not increase the possibility of miscarriage.

To be well on the safe side it is desirable:—

- (1) To *closely watch* the urine, skin, blood pressure and signs of reactions during antisyphilitic treatment of pregnant females.
- (2) To *attach greater gravity* to reactionary signs in pregnant females than in others.

Of the numerous bismuth compounds the liposoluble ones e.g. "Biliposol"—2 c.c. biweekly up to 10-15 injections at the most are recommended nowadays.

The simplest measures which favour excretion of bismuth in all subjects are:—

- (a) Liberal use of water as a drink.
- (b) Use of ordinary salt (at least 5 grammes a day)—all chlorides are useful.
- (c) Administration of iodides in conjunction with or just following a course of bismuth. The smallest effective dose is 1 gramme.
- (d) Increase of muscular activity of the injected area.
- (e) Administration of thiosulphates.

The first four can be very easily adopted in every case.

Further details about treatment both constitutional and of local lesions differ very little from those in males so they are outside the scope of the present paper.

Here I intend to stop as I believe I have touched upon, though briefly, every aspect of the subject I ventured to take up.

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THE INCIDENCE, PREVENTION, AND TREATMENT OF CARDIOVASCULAR SYPHILIS.

BY

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INTRODUCTION.

SIR William Osler once remarked "Know syphilis in all its manifestations and relations and all other things clinical will be added unto you." No one can doubt the wisdom of his remarks. If one has had a thorough grasp of the natural history of syphilis in all its aspects, one has undoubtedly mastered, it may be said without fear of contradiction, more than half of Medicine. The object of the present paper however is to deal with syphilis only in its relations to the heart and aorta.

It was as far back as 1761 that Morgagni recognised the relation between syphilis and aortic aneurysm. Later on, from a study of the most accurate autopsy records of Ricord (1845), Welch (1876), and Dohle (1885), one meets with earliest descriptions of myocardial gummata, syphilitic aortitis and other aortic lesions. Reuter, in 1906 demonstrated the *spirochaeta pallidum* in the wall of the aorta in syphilitic aortitis. Since then, much work has been done by eminent research workers of various countries regarding the pathological processes involved in cardiovascular syphilis—whether there is true diffuse syphilitic myocarditis apart from the occasional presence of undoubted gummata, whether there is an involvement of the trunk of the coronaries leading to angina pectoris and coronary thrombosis. In spite of Warthin's most valuable work on the subject, it is almost universally agreed that the existence of a true diffuse syphilitic myocarditis is not yet proven. The most essential and earliest pathological lesion is an involvement of the aorta above the semilunar valves—an aortitis. The aortic insufficiency is always secondary to an aortitis spreading downwards and involving the root of the aorta resulting in a pushing apart of cusps at their attachments and a widening of the commissures. Aortic stenosis, however, is rarely if ever caused by syphilis. Stenosis of the coronaries at their mouths, rarely seen over 1 cm. beyond the orifice of the artery, is often associated with aortic insufficiency and occurs in about 30 per cent.

of syphilitic aortitis ending in death.¹ The main myocardial lesion in aortic disease is hypertrophy, both on gross and microscopic examination. Other lesions are infrequent and of no great significance.² Aortic aneurysm is also a sequel of the upward spread of the aortitis leading to a weakening of the aortic wall by the syphilitic gummatous infiltration. It should be emphasised that syphilis is a rare cause of angina pectoris, being the etiological factor in only 4.6 per cent. of the cases, as reported by P. D. White and Levine.

INCIDENCE.

The incidence rate of cardiovascular syphilis in any country depends on the special skill and care with which the clinicians set upon the task of diagnosis of the disease in its earliest phases. The diagnosis of cardiovascular syphilis in the living began in 1906, only after the discovery of the Wassermann reaction. The latter however is not very helpful as the serum reaction is positive only in 61 per cent. while a negative reaction is met with in about one third to one fourth of the cases.

In the United States of America, 10-15 per cent. of all cases of organic heart disease are due to syphilis.³ P. D. White⁴ reports that the incidence of syphilitic heart disease in private practice in New England is as low as 2.4 per cent. of all organic heart diseases, though, in hospital practice the percentage may be a little higher. The age incidence reaches a maximum between the ages of 50-60 years except in Negroes, where it is 5-10 years earlier. Regarding the sex incidence of cardiovascular syphilis it is interesting to note that it is more than 5 times commoner in men than in women. In Bengal however, as far as my experience goes, the incidence of cardiovascular syphilis is about 20 per cent. of all organic heart diseases. The age incidence in more than half the cases, here, is between 35-40 years. In a few it has been noted as nearly as 28-30 years.

PREVENTION

Syphilis is being adequately treated for the last 15 years; yet little is known about the role of early treatment in the prevention of cardiovascular involvement or about the influence of such treatment on the course of the disease. The problem is beset with difficulties. Firstly, the diagnosis is rarely made until 20 years or sometimes more have elapsed since the appearance of the primary lesion—the chancre. The reason is not far to seek. The patients do not find anything amiss with themselves and so do not consult the

medical practitioner. Of course infection of the heart and aorta takes place during the secondary stage of syphilis. The spirochaetes lie dormant between the muscle bundles or in the perivascular lymph spaces causing little or no tissue reaction. Fordyce⁵ suggests that the tissues slowly develop, during the latent period, an allergic state and then react with oedema, round cell infiltration and tissue destruction and gives rise to manifest clinical symptoms. Secondly, the diagnosis of uncomplicated syphilitic aortitis which is recognised to be the earliest lesion, is difficult, because there are no symptoms in half the cases.⁶ Still the presence of substernal pain, paroxysmal dyspnoea, often nocturnal, and abrupt onset of dyspnoea on exertion in syphilitic subject should arouse suspicion of early syphilitic aortitis. Aortic systolic murmur with ringing aortic second sound in absence of hypertension, tele-radiographic demonstration of widened aorta with increased opacity but decreased pulsation and elongation of the arch, as well as electrocardiographic abnormalities viz., widening of the QRS complex and flattening or inversion of T in Lead I, would be additional valuable aids in the confirmation of the diagnosis. If clinicians would take pains to diagnose cardiovascular syphilis in its earliest stage of uncomplicated aortitis as suggested above, it may be possible to check the progress of the lesion to a great extent and thus prevent the supervention of aortic insufficiency, aneurysm and coronary involvement. But the real problem of prevention of cardiovascular syphilis really depends on the prevention of syphilis itself—a subject I would leave to the careful consideration of the expert venereologists, the public health workers and to the social reformers.

At present, it is hoped that a thorough and intensive treatment of syphilis in its primary stage will prevent the later involvement of the cardiovascular system. But at the same time grave doubts arise in one's mind as to the fulfilment of such a pious hope, when one considers that syphilis becomes a systemic infection even days or weeks before the appearance of the chancre. Extensive statistical studies in future will, however, show whether cardiovascular syphilis could be prevented by the institution of a well-planned early treatment in the primary stage.

TREATMENT.

In a consideration of the treatment of the cardiovascular syphilis certain facts should be borne in mind. Firstly, the heart and great vessels show evidences of syphilitic invasion

(a) during or soon after the earlier blood-borne phase and also (b) at an interval of one, two or more decades after the primary infection.⁷ The second group is much larger and much less amenable to treatment because of the occurrence of considerable irreparable damage to the cardiovascular system before the diagnosis is made. Secondly, the average duration of disease from chancre to first diagnosis of cardiovascular syphilis is 20 years and the average period from chancre to death is 23 years.⁸ Thus it is obvious that the average duration of life from the first diagnosis of the disease to death is three years, though exceptional cases may live for many years. These facts would inevitably lead to doubt and diffidence regarding the efficacy of the treatment of the cardiovascular syphilis. Nearly all syphilologists and internists are, however, agreed that some form of treatment is always helpful. According to Hazen,⁹ the life expectancy of aneurysm cases can be markedly increased with one course of arsphenamine and increased nearly two-fold with a year's treatment of alternating courses of a heavy metal and arsphenamine. The comfort of the patient is also greatly increased thereby. The life expectancy of patients with aortic regurgitation is little changed by one or two courses of arsphenamine and a metal. It is doubled, however on three or better four courses of treatment. Regarding the practical details of treatment there is a good deal of divergence of opinion amongst various authorities. But almost all of them, specially Coombs, White, Carter, and Lamb advocate a conservative attitude and limit the use of arsenical preparations to small doses only. Over-treatment which is the greatest danger, is to be deprecated. During the stage of congestive failure, which is the end-result of most cases of aortitis, anti-luetic treatment should be absolutely withheld until the establishment of compensation. In such cases, absolute rest in Fowler's position, limitation of fluid and salt in the diet, digitalis and diuretics like diuretin, ammonium chloride and salyrgan are indicated. Anti-syphilitic treatment should always begin with iodides and mercury possibly supplemented with intra-muscular injections at least two to three weeks after all signs of circulatory failure have disappeared. Arsenical preparations should be used with caution and in small doses, when the preliminary course of treatment with iodides and mercury or bismuth, has been continued for about three to six weeks. This is particularly essential in cases of aortic regurgitation, since the coronary orifices are most likely to be narrowed in such cases and any local reactionary swelling (Herxheimer reaction) may produce complete occlusion and

death. Hence, before the commencement of antisyphilitic treatment, patients should be electrocardiographed to have a knowledge about the presence or absence of coronary involvement. It may also be pointed out that suitable rest periods must alternate with the courses of treatment. A full course of treatment should, however, be spread out over a year as follows (modified from Maynard):¹⁰

- (1) Intramuscular injections of mercury, gr. $\frac{1}{4}$ —1, once a week for 6 weeks with oral administration of iodides upto grs. 30 t.d.s.
- (2) Rest for 2 months.
- (3) A course of intramuscular injections of bismuth until a total dosage of 2 gms. is reached.
- (4) Rest for 2 months.
- (5) A course of 6 weekly injections of neosalvarsan beginning with 0.1 gm. and increasing upto 0.45 gm.

The whole course as outlined above may be continued with great benefit for a second year. Individualization of the treatment is however essential. The Wassermann reaction is only infrequently negative in spite of the treatment, and the clinical condition of the patient is the only reliable guide as to whether a further course of treatment is necessary or not.

Lastly regarding the duration of treatment, I can do no better than quote the remarks of Carey Coombs. "The diagnosis of cardiac syphilis carries with it the implication that its subject will be under treatment more or less active, for the rest of his life."¹¹

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MANIFESTATIONS OF SYPHILIS AFFECTING THE PHARYNX AND NASO-PHARYNX

BY

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BOTH hereditary and acquired syphilis affect the throat. Hereditary syphilis manifests itself as flattened condylomata and mucous patches, or shallow ulcers, on the fauces and tonsils. About puberty, gumma may develop, and these by destructive ulceration lead to perforation of the palate.

Acquired Syphilis.—Primary, secondary, and tertiary manifestations are seen. Primary syphilis is not very common. The usual site for it is tonsil, and the infection is conveyed by kissing a person with secondary syphilitic lesions of his mouth, or from infected drinking vessels, as well as, to unnatural practices.

The sore is unilateral, and hard when palpated with a gloved finger. The glands at the angle of the jaw on the same side are enlarged. This should be kept in mind when a suspicious lesion is visible in the throat, but it should never be diagnosed as such, until the condition is made sure by needling the tissues deep to the ulcer, and examining the slide with Indian ink, and *Spirochæta pallida* are found; but other *Spirochætes* like *Sp. fetida* of Vincent angina, *Sp. buccalis*, and *Sp. dentium* are also present in all ulcerative conditions of the mouth.

Secondary Syphilis.—It is much more common and is of greater importance. It manifests itself as a sore throat, affecting both sides of the throat, at about the same time when secondary skin rash appears. The redness is symmetrical, dusky, sharply outlined and the plaques appear first as little comma-like, greyish yellow spots on the tonsils, specially about the edges of the crypts, and on the pillars of the fauces. As the spots coalesce, they form larger whitish patches, which look very much as if nitrate of silver has been applied to the mucous membrane. A favourite site is close to the base of the uvula. The mucous patches are slightly elevated bluish white areas being symmetrically disposed on the anterior aspect of the faucial pillars. Other sites are the tonsils, tongue and the inner sides of the lips. These patches are full of *spirochætes*, and constitute a fruitful source of infection. Later on shallow ulceration is occasionally seen.

It is well to remember that a sore mouth and throat for which the cause is not obvious, and which resists ordinary treatment, may very possibly be syphilis: even though the usual signs are absent. "When in doubt, treat for syphilis." It is, of course, quite possible to err in the opposite direction, and see syphilis where none exists, but such an error is much less serious than the other.

Tertiary Syphilis.—It may produce three varieties of lesion in the pharynx, namely, ulceration, the gumma, and diffuse infiltration. They all appear late in the disease; but sometimes tertiary ulceration follows on the shallow ulcers seen in the pharynx of secondary syphilis.

The gumma is usually formed on the soft and hard palate near the middle line, but it is also seen on the tonsil, the base of the tongue and the posterior wall of the pharynx or nasopharynx. It has usually begun to ulcerate before coming to our notice, and we then see a red swollen area of infiltration surrounding a deep ulcer with punched out edges and a yellow wash-leathery base. The deepening ulceration rapidly produces perforation of the soft palate. In the hard palate the bone may be destroyed and a communication formed between the mouth and the nose. In neglected cases, the infiltration and ulceration may produce extensive destruction of tissue in all parts of the pharynx, fauces and palate.

The syphilitic ulcer, with its deep punched out sides, its wash-leather floor, its painlessness and rapid course can usually be distinguished from:

1. The *tuberculous* ulcer which is extremely painful with smooth edges, greyish pale base, and surrounding pallor of mucosa. Its course is much slower than that of syphilis.
2. Cancerous ulcer is painful with hard thickened and ragged edges and hard infiltrated base. There may be limitation of movements of muscles in swallowing and turning the head. The cervical glands are hard and enlarged.
3. The *lupus* ulcer is painless, its surface is greyish, dry and granular. The apple-jelly lupus nodules are seen around it, and there are usually deposits in the nose as well.

Syphilis is by far the commonest cause of pharyngeal ulcers.

tion. Other stigmata of syphilis are usually present, and the Wassermann reaction is generally positive.

Prognosis.—The primary sore lasts for from four to six weeks. Septic infection of the locality may transform the appearance of the case into one resembling acute septic pharyngitis with high temperature and constitutional disturbance. Secondary syphilitic pharyngitis passes off spontaneously and in most cases, in four to six weeks; but if untreated deep ulceration may supervene. Under treatment, the disappearance of the throat phenomena is rapid.

The prognosis of tertiary syphilis is favourable when the disease is in its earlier stages; because then the loss of tissue is slight and the amount and degree of cicatrization is limited. Advanced cases have good prognosis so far as the cure of the malady is concerned; but the loss of tissue cannot be made up.

Treatment.—The primary sore is painted with pure carbolic acid, and antiseptic mouth washes and gargles are prescribed. The constitutional treatment of syphilis by one of the salvarsan group and mercury should be instituted.

The mucous patches should be cauterised with nitrate of silver after cleaning them with hydrogen peroxide. An alkaline mouth wash is given, or pot. chlorate with lotio nigra is prescribed. The gummatous ulcers are painted with chromic acid solution (10 gr. to an ounce) large tertiary ulcers may be dressed with an insufflation of calomel.

CASES OF SYPHILIS OF THE GASTRO-INTESTINAL TRACT.

BY

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CONSIDERING the rarity of involvement of the stomach and the small intestines in syphilis, I have thought it will be of interest to contribute to the special number of the "Antiseptic" dealing with this disease, the several cases that have been under my care or observation during the last 3 years in which the signs and symptoms rapidly cleared up with specific treatment.

P. C. A Hindu male, aged 28, was admitted to Moulmein General Hospital with symptoms typical of chronic duodenal ulcer of 3 years' duration. He was very emaciated. Pain recurred both

night and day an hour and half after taking food, without vomiting. History of malaria 6 months ago. In the beginning alkalines were of some use to allay the pain but during the last 6 months it had not helped at all. The gastric content analysis did not show any increase in HCl, but the total acidity was more than normal. Occult blood was present in the motion. As it was my practice however to do a Wassermann reaction of all gastric cases before I operated, the blood was sent for examination and found to be strongly positive. He was put on specific treatment. Six doses of Neosalvarsan was given beginning from .3 gramme and ending in .75 gramme, weekly, and in the intervals 15 grains of sodium iodide was given intravenously as well, as often as the patient could bear it. After the stomach symptoms subsided, he was put on mercury and iodides by the mouth. In three months time the patient was perfectly cured and gained 45 lbs. in weight.

Ok Chi—Chinese male, aged 36, hawker by occupation, admitted with symptoms of chronic dyspepsia in Rangoon General Hospital. Had lost all appetite. Used to vomit frequently after taking food and always complained of pain of a dragging nature in the stomach area. Was emaciated and anæmic. There was a hard mass palpable in the epigastric region. There was occult blood present in the stools, and analysis of the gastric contents showed considerable diminution of free HCl and some lactic acid and torulæ. R. B. C. was present. On X-ray examination no definite crater was found but there was delayed emptying. Wassermann examination was positive. Patient gave history of venereal infection, and the treatment undergone for it was by Burmese physicians who administered mercury by mouth. The case simulated closely cancer of the stomach but the condition cleared up very well with anti-syphilitic treatment.

The pathological conditions underlying the case simulating a duodenal ulcer was very probably an infiltration of the lesser curvature of the stomach near the pyloric end as the duodenum is not known to be so involved. The case simulating a cancer is a general infiltration of all coats of the stomach rendering it into a leather bottle condition. Both of these were late manifestations and therefore must have been of tertiary nature.

H. D.—Hindu male, aged 40, admitted into hospital for chronic diarrhœa of nearly one year's duration. His appetite was poor. Was having 7 to 12 large watery motions every day without any mucus or blood. Complained of considerable amount of flatulence. Was greatly emaciated and had some ulcers in the

tongue and mouth. Case looked typically a case of Sprue of the tropics. Examination of stools showed no ova or amœba or cellular exudates. Occult blood was present. Examination of other systems revealed nothing abnormal except fairly marked secondary anæmia. Treatment was of no avail for nearly a month until a blood examination showed a strong Wassermann reaction. He was started with anti-syphilitic treatment and he made rapid recovery, and in 2 months more he was a perfectly normal person.

S.M.—Mahomedan, male aged 35. Patient was treated by me privately. Is a fairly well-to-do merchant living in affluent circumstances. Had suffered from diarrhœa for over a year for which he had diverse methods of treatment. The diarrhœa was mostly confined to the morning, passing 3 or 4 large motions with some amount of slime in it. It was diagnosed as mucous colitis. He had occasional rise of temperature, but practically very little discomfort except in the morning, and his body weight was not markedly affected in spite of the duration of the diarrhœa. Had no ulcerations of the mouth and tongue. Blood examined, however showed slight secondary anæmia and increase of lymphocytes. Wassermann reaction was strongly positive. He was given anti-syphilitic treatment and the result was remarkable. In about 2 months he became a normal person. A second course was given after a period of six months, as the Wassermann reaction was still doubtful. This patient has been under my observation for about 2 years and has remained perfectly free.

Burmese male, aged 25 years was admitted into Rangoon General Hospital under Lt. Col. Sheppard, F.R.C.S.E., I.M.S., the 2nd Surgeon for treatment of stricture of the œsophagus at the cardiac end of the stomach. The stricture was impassable by a bougie and the patient was unable to swallow even liquids. A preliminary gastrostomy was made for feeding purposes and as the blood examination showed a marked Wassermann reaction he was put on anti-syphilitic treatment. In three weeks' time the stenosis had slackened and a bougie could be passed in. The tube was taken out after a month and the patient began drinking in the normal way liquid nourishment. Since then his recovery has been uneventful and was at the time when shown in a clinical meeting able to swallow solid food.

My sincere thanks to Lt. Col. Sheppard, I.M.S. for kindly allowing me to incorporate this case in this series.

The pathological condition underlying the cases of diarrhœa must be also infiltration of mostly the intestines. There was

some amount of digestion in the small intestines. There were neither actual pain nor tenderness complained in any of these two cases, and the stool examination revealed nothing more than the presence of occult blood. The question may be asked if it was not the general anamia of syphilis which produced this diarrhoeal symptom, but in the case of S. M. there was very little anamia and the blood picture did not show any changes in the R. B. C. The cases therefore must be definite gummatous infiltration of the intestines.

The above experience shows the remarkable benefit in knowledge that has accrued to the medical profession and that can be bestowed on the patient by the serological test of syphilis to obscure and obstinate cases of diseases of gastro-intestinal system.

RENAL SYPHILIS

BY

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INTRODUCTORY.

RENAL syphilis has received so little attention that its very existence is often forgotten and it is relegated to one of the "Pathological curiosities." It would not have mattered much, had it not been intimately connected with the most important problem facing us at present—the eradication of syphilis.

Since his prehistoric fight against disease, man has never encountered a more formidable foe than syphilis and we, rightly, find him exercising all his might to curb and ultimately to destroy this dreadful enemy. Fortunately, he has reached a stage when he is wielding some very powerful weapons. The fight has to be a ceaseless one and as thoroughly complete as we can dream off in our wildest dreams; for what a conspicuous part does it play! One syphilitic patient untreated—and for the individual there is the danger of its manifesting itself in its countless forms; for the society, it remains a live source from which it may spread insidiously in its organised camp and the stamp of venus might be transmitted for generations. It brings in its wake so vast a number of diseases by preparing a bed for them to grow, that it has been aptly said that if one knows everything of syphilis, he knows 50% of medicine. There can therefore, be no two opinions on the

point that no case of syphilis that comes to a medical man should be allowed to go untreated.

And having said this with all the emphasis at my command, is it not amusingly surprising that medicine, for generations, has allowed the belief to foster that the presence of albumen in the urine is a contra-indication for the administration of anti-syphilitic remedies? Nobody disputes the fact that these remedies do exercise some deleterious action on the kidneys but would it not be amounting to a grave negligence if these cases of syphilis with albumen in the urine are left untreated? It is necessary that we should get out of the long laid rut and pause to think—if only to think—and try to consider whether it is possible to reduce this ridiculous generalisation to as small a limit as possible. What if these renal manifestations are due to syphilis.

And it is thus that we come to think of the question whether syphilis affects the kidneys.

IS RENAL SYPHILIS A CLINICAL ENTITY?

It is a good old adage that "Syphilis is a disease which mimics every disease"; and when we come to think of the manifold manifestations of the disease, it would be next to impossible to deny the existence of syphilis.

Morgagni was the first to recognise that syphilis could affect the renal tissue and the exhaustive studies of Rayar (1840) and Herxheimer put the final seal of confirmation. Various cases have been quoted in which the diagnosis of syphilitic nephritis was beyond dispute, for it should be remembered that "the syphilitic toxin is very poisonous to the renal filter".

Incidence.—When we come to the question of deciding the frequency with which the renal filter is damaged by this toxin, we are treading on a slippery ground. It is very difficult to have even a remotely accurate idea. Statistics are difficult to obtain for the very simple reason that it is very difficult to attribute syphilis definitely as a cause in a particular case of nephritis. The mere fact that evidence of syphilis is obtainable does not necessarily prove that the kidney lesion is due to syphilis. "Except in the secondary stage in which the acute form, having special features, is well recognised, it is impossible to say whether the diffuse chronic lesion is primarily syphilitic or only the ordinary form occurring in a syphilitic subject" (Osler). Over-indulgence in alcohol or cold may be the actual cause. Chaufford reports two cases of nephritis in syphilitic subjects in the secondary stage—one was cured at the end

Symptoms.—All gradations from a very mild form in which albuminuria is almost the only symptom (Faccoud) to a very severe one which rapidly proves fatal, are seen.

1. **Congestion.** Slight albuminuria without any signs and symptoms of Brightism is very common in the secondary stage. Instead of being a contra-indication for the administration of anti-syphilitic remedies it is actually calling for them. One injection of Neosalvarsan generally is enough to make it disappear. It is extremely important to carefully watch the patient and thoroughly treat him, for he may develop further actual nephritis, if untreated.

2. **Mild form.**—There may be slight œdema of the eyelids. General constitutional disturbances or "symptoms of Brightism" (Dieulafoy) are absent. Urine contains albumin and occasional hyaline casts. The functions of the kidney are not deranged. The mildness of the disease must be due as can be guessed, to weakness of the toxi-infectious agent and to the marked integrity of the kidney tissue. Nothing should deter the medical man in treating these cases on antisiphilitic lines for there is always the grave danger of these cases recurring in a more severe form. They must therefore be vigorously treated and closely watched.

3. **Severe form.**—This often manifests itself with marked symptoms of Brightism—lumbar pains, œdema, fever, anorexia, vomiting. The œdema is general and intense. Examination of urine reveals the same abnormalities as are found in ordinary acute nephritis, but the remarkable feature and to some extent a characteristic one, is the presence of enormous quantities of albumin causing the urine to go solid on boiling. Generally it amounts to 15 to 25 grms. per litre (Osler) but as much as 110 grms. per litre has been found (Decouts 1878, These de Paris). Dieulafoy quotes three cases in which 345 grains, 240 grs., 500 grs. respectively in 24 hours were estimated. Renal permeability to methylene blue is normal or slightly raised. The blood-pressure is not increased and cardiac hypertrophy and gallop rhythm are absent. This excessive albuminuria is certainly due to the extensive epithelial damage which exists, often to the exclusion of any interstitial or vascular lesion.

Case—(Clinical Lectures, 'Nephrite Syphilitique', by Dieulafoy) Young man sent by Mauriac. Puffiness of face and œdema of legs had appeared suddenly 2 days previously. Oedema considerable. Urine normal in amount. Abundant albumen—6 drams. in 24 hours—no hæmaturia.

History of chancre on penis 2 months previously. Indurated, hard painless glands in the groin, mucous patches in the throat and round the arms. No history of cold or any other causal infection. Diagnosed as early syphilitic nephritis.

On milk diet and a desert spoonfull of the following mixture night and morning.

Pot. Iodide	...	℥i
Bin iodide of mercury	...	grs. iii
Aqua Distillata	...	℥xii

The effects were rapid and successful. The albumen had disappeared by the 7th day, œdema had completely disappeared in a fortnight and he got rid of 21 lbs. of liquid from tissues.

He was seen several times after he left Hotel Dieu. His recovery was maintained. Six months later when seen he was perfectly well and was taking ordinary diet. The albumen never appeared.

Diagnosis.—The acute nephritis in secondary syphilis is the only form in which the diagnosis of syphilis as the causative factor can be made definitely. The following points differentiate it from nephritis due to other causes :—

- (i) The nephritis is early; after the first year of life the patient is practically safe from this terrible eventuality.
- (ii) The sudden onset and tendency to cause general anasara—œdema of lungs, pleural effusion, ascites (Jaccoud).
- (iii) Abundance of albumen, disproportionate to the decrease in the amount of urine and the casts are rare.

Prognosis.—A very guarded prognosis should be given in the severe forms. In spite of treatment, it often goes to a fatal termination though some cases do yield to antisiphilitic treatment. It should be remembered that the extensive epithelial lesions produced by the syphilitic toxin are irreparable.

II. TERTIARY SYPHILIS OF THE KIDNEY.

1. **Acute nephritis.**—is proverbially rare in the tertiary stage and needs no further consideration.

2. **Chronic nephritis.**—Simulating, as it does, the chronic Bright's disease, it is practically impossible to distinguish it from the ordinary type. "If however a patient has chronic nephritis and we find

in his history no other cause than syphilis and if, a fortiori, the nephritis is contemporaneous with other tertiary lesions, it is logical to set down the kidney trouble to syphilis".

Case I.—A man with symptoms of Brightism examined and treated by Charrier as chronic Bright's disease, symptoms persisted in spite of treatment and œdema of the legs increased and Charrier asked Dieulafoy to admit him.

Patient admitted history of syphilis 10 years before. In no wise did it differ from common Bright's disease. Daily inunctions of mercury and 45 grains of potassium iodide daily, and increased to 90 grains changed the situation in a fortnight and in a month patient was discharged at his own request all the symptoms having disappeared. After 18 days, there was not a trace of albumen in the urine.

Case II.—A man admitted for coma. No paralysis, marked œdema of the face and legs. For the past 10 days he was suffering from headache. Examination of urine confirmed the diagnosis of uremia. During the next few days his somnolent condition did not change. History of syphilis, 15 years previously. He was put on Biniodide of mercury injections and 80 grs. of potassium iodide daily.

In 4 days, improvement was seen. The quantity of urine doubled and the amount of albumen was reduced by half. Within a few days, drowsiness and headache disappeared and the urine presented only a trace of albumen. 18 days before, he was comatose and his condition most grave, but now he could get out of bed and talk like a normal person after 18 injections and 3½ ounces of potassium iodide. A fortnight later, the patient considered himself cured (a premature idea) and asked to leave the hospital. Six months later he was in good health, only a trace of albumen being present. He was again put on mercury and potassium iodide but left without having the patience to wait for a definite cure.

(Dieulafoy's cases from Hotel Dieu Paris.)

3. *Gummata.*—They do not usually occur before the 4th or 5th year of disease (Keyes). "Syphilitic gummata are not com-

mon in the kidney. In 1864, I saw a kidney with about 20 in the cortex. This patient was an old woman who had died from albuminuria and anasarca. The liver was riddled with typical gummata, the kidney also showed amyloid degeneration and the gummata presented the characteristic three zones". (Cornil). They are often mistaken for tumours of the kidney. Israsel has reported three cases and the famous Bowlby's case (1908) would bear repetition.

Case (Bowlby).—Woman of 40 with swelling in the right renal region. Kidney was large, hard and easily movable. New growth was diagnosed and kidney excised.

Kidney—Weight 17 ounces, surface nodular, organ cut like fibrous tissue and presented almost cartilaginous appearance. Renal tissue had entirely disappeared. Microscopic examination showed small cell infiltration and gaseous degeneration and other characters of gummata.

Patient recovered rapidly. They often simulate tuberculosis of the kidney and occasionally, renal colic.

Case (Osler).—C. D. 41, 13 years in navy. Syphilis in 1882, Malta fever in 1885 and also influenza. No history of rheumatism or tuberculosis.

Sharp pain in the right loin. Paroxysmal attacks coming on walking. Pain very severe but never went down the groin nor made him vomit. Lost 12 lbs of weight.

For the last 5 days, the pain was referred to the tip of the penis and there is pain on micturition. The right testicle was swollen for the last 4 days.

Patient healthy looking and well developed. Marked tenderness in the right loin, back and front and along the ureter. Right seminal vesicle and testis, enlarged and tender. Fever 4 days.

Urine.—Sp. gr. 1026; acid, slight albumen cells and granular debris present. No tubercle bacilli even after several examinations.

Under treatment with potassium iodide all signs and symptoms disappeared within two months.

Cuffer showed a case of syphilis of the kidney at the Société Anatomique, characterised by a large, grey and homogeneous gumma. Wagner published a case of gumma in the right kidney. Piengel, Larcereaux, Lailler and Key have found gummata in kidneys, associated with other syphilitic lesions (Mauriac's Monograph).

4. **Sclerosis or atrophy.**—This presents the usual signs and symptoms of sclerosis and can always be differentiated from other causes as the liver also presents the syphilitic lesions. Of 63 cases of syphilitic nephritis, Wagner in 8, found the small granular, atrophied kidney. This condition can be distinguished from chronic nephritis as the latter is always bilateral. Weigert found unilateral atrophy in 6 cases, while Key described 20 cases in which the atrophy was limited to the lower part only.

5. **Amyloid degeneration.**—This supervenes very late in the untreated cases of syphilis. History generally reveals that a period of 5 to 10 years has elapsed after the infection and that of frequent tertiary manifestations. The patient looks pale and anæmic and the general condition is very bad. The most important point in the diagnosis is the presence of signs and symptoms indicating involvement of liver, spleen, and intestines.

Diagnosis.—This is more a matter of supposition and the general rule that should be observed is, that if the patient has had syphilis we may assume that the kidney lesion is syphilitic until proved otherwise. The therapeutic test of administering anti-syphilitic remedies would clinch the diagnosis. "Syphilis is a frequent cause of inflammation of the kidney and therefore, should be borne in mind by clinicians when investigating disease of this organ (Osler). The recommendations of the French School in this respect are excellent.

(i) Treat all suspected cases on general lines first and if no improvement takes place,

(ii) Put the patient on anti-syphilitic remedies.

As Mauriac so forcefully puts it, once it is proven that the patient has had syphilis, we must estimate this as a factor of prime importance, not that it (syphilis) is the most important cause of Bright's disease but because it gives us hope and a therapeutic indication. The insignificance, the fewness of the early manifestations and the long period which elapsed without the appearance of any syphilitic accidents, none of these things impair the force of this precept and we must respect it even in those cases in which

the action of syphilis upon the kidney appears problematic and subordinated to graver and more proximate pathogenic influences.

Conclusion.—After this somewhat exhaustive review of the question of Renal Syphilis, it would be realised that one cannot conscientiously hold on to the belief that presence of albumin in the urine is a contra-indication for the administration of anti-syphilitic remedies. Firstly, as has been pointed out, simple albuminuria is very common in the secondary stage of syphilis and it calls out for antisiphilitic treatment for "it usually disappears after the first dose of salvarsan" (Harrison). Secondly, the nephritis of the secondary stage is not very difficult to diagnose, if carefully sought for and though it does not respond miraculously to the treatment by antisiphilitic drugs, that is the best that we can possibly do for it. Thirdly, the tertiary syphilis of the kidney is difficult to diagnose but we ought to follow Mauriac's emphatic advice (above stated) and lastly there is the question of patients suffering from syphilis and from a concomitant kidney affection which may not necessarily be syphilitic. Are we not to treat syphilis in those cases but leave them off to their own fates? For an answer to this grave problem, I cannot do better than quote Harrison—"As a matter of practice, if it is clear from other signs, that the patient is suffering from syphilis, I believe, that it can only be right to administer anti-syphilitic remedies, regulating the dosage to the condition. If syphilis is not treated, the well-known preference of *Sp. pallidum* for damaged tissues will result in the nephritis becoming mainly syphilitic, if it is not so from the beginning".



THE TREATMENT OF SYPHILIS IN CASES OF LEPROSY

BY

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INTRODUCTION.

THE treatment of syphilis with organic arsenicals has, within recent years, become such a common place in medical practice that it is difficult for the general practitioner to realise that there are risks in using the same arsenicals for treating syphilis in a case of leprosy. When a leprosy specialist speaks of the risks attendant upon the use of N. A. B. and similar other arsenicals, the general practitioner is at first inclined to doubt and then passively acquiesces in the cautious attitude of his specialist brother. What are the risks run when one has to use the potent organic arsenicals in cases of leprosy? The greatest risk from the point of view of the patient, is a "flare up" of his leprosy, and possible involvement of his eyes in a bad lepra-reaction resulting in total or sub-total blindness. These organic arsenicals are not the only "red rags," and there are other preparations of heavy metals which are equally dangerous. Therapeutic research with inorganic and organic compounds of heavy metals in cases of leprosy, within the last decade, has shown that except in very small doses such preparations of heavy metals are capable of inducing the allergic condition known as "lepra reaction" the effect of which may be a further advance in the course of leprosy with the involvement of the eyes. Once the eyes are involved in a bad reaction, it is rather difficult to undo the mischief; consequently any plan of treatment that may be adopted to deal with syphilis in cases of leprosy, specially with preparations of heavy metals, should take cognisance of the serious risk that may ensue in the form of a lepra-reaction. What then, is the best method of treatment for such cases? A clear and decisive answer to this question cannot at present be given; but certain principles in planning the treatment which should be always kept in mind as a guide, may be enumerated:

- (1) Choose a preparation which has a maximum parasitotropic effect in *minimal* doses.
- (2) The preparation chosen should not exert pronounced tissue-lysis in minimal therapeutic doses.

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- (3) Ease of administration, relative painlessness and above all cheapness, are other factors that have to be borne in mind.

Judged by these principles, does any one of our present day anti-syphilitic remedies meet our requirements? I am afraid, *not*. The ideal remedy for the treatment of syphilis in cases of leprosy, is yet to be discovered. But does this mean that we should adopt an attitude of utter despair and do nothing for the leprous syphilitics? Certainly not; we have to make the best use of all the potent anti-syphilitic remedies placed at our disposal by modern pharmaceutical science, but before we do so, it is essential that the therapeutic limitations of each preparation should be ascertained by experimental trials in suitable cases of leprosy. Some attempts in this direction have been made in the Purulia leper colony and in the Cuttack leper asylum when I was there, within the last 5 or 6 years, and the purpose of this paper is to state briefly the results of such trials and to lay down, if possible, certain lines of treatment which have in the experience of the writer proved to be relatively efficacious and devoid of any serious risks to the patient.

Novarsenobillon, Sulpharsenol, Avenyl, Mercury Salicylate, Bismuth salicylate and Mercurochrome have all been tried, with a view to assess their comparative merits and their drawbacks, if any. Of these N. A. B. undoubtedly is the best preparation, but the most risky to use. Sulpharsenol comes next to it in point of therapeutic efficacy and not so risky. Avenyl and Mercury Salicylate are both equal in potency and they are considerably inferior to the two arsenicals in therapeutic efficacy. Bismuth Salicylates and Mercurochrome are very slow in action and are inferior to Mercury Salicylate in point of therapeutic efficacy.

Treatment with N. A. B.—As highly nodular cases (C_3) do not stand N. A. B., it is better not to select such cases. But if such cases have to be treated with N. A. B. by reason of the fact that they have a strongly positive W. R. or Kahn or have unmistakable clinical manifestations of syphilis, then, have the Erythrocyte sedimentation test done, and note the initial sedimentation index. In the interests of uniformity and comparability of results it is urged that the well known and fool-proof technique of Dr. E. Muir, be used, in carrying out the blood sedimentation test, give intravenously 0.15 gramme of N. A. B. which is the usual initial dose for an adult. On the second or 3rd day if there is no

clinically recognisable reaction—pyrexia, neuritic pains, appearance of new nodules and swelling of old nodules etc., then do a second sedimentation test and if this second index is higher than the first by more than 10, repeat the same dose for another two or three weeks. It is always preferable to have these injections only once a week. If there is a clinically recognisable mild reaction even after the very first injection, then, one has to proceed very cautiously with the treatment in such a case. Mildly reacting cases may be given fortnightly injections instead of weekly. This gives the patient a chance to recover from the effects of tissue-lysis produced by the previous injection. In the absence of a clinically recognisable reaction, and if the rise in the sedimentation index is not more than 10 (after the first injection) the next higher dose viz., 0.3 gramme may safely be given; usually this dose produces a clinically recognisable reaction of varying severity in most of the highly advanced nodular cases. If the reaction is very mild—say the temperature does not rise to more than 100° F and the pyrexia is of a few hours duration, then the same dose may be repeated next week or next fortnight depending upon the general health of the patient. Ordinarily it is not safe to exceed the 0.45 gramme dose in advanced nodular cases, but there are such cases who have stood the maximum dose of 0.9 gramme without any untoward result; but they happened to be exceptional ones. Those who can take plenty of milk, fresh vegetables, good nourishing food and enough exercise have been observed to stand the higher doses of N. A. B. without bad reactions.

Milk seems to be specially valuable in avoiding bad reactions. Patients under such favourable conditions as are afforded by good food and plenty of exercise may be encouraged to take the higher doses of N.A.B., provided a strict watch on their sedimentation index can be kept. It sometimes happens that a highly advanced nodular case stands up to 0.9 gramme doses of N.A.B. without any bad reaction, but after the cessation of the last dose of a course, severe and prolonged lepra reaction results. This, needless to say, is due to the cumulative action of arsenic. Keeping this possibility always in mind, one has to proceed very slowly after reaching the 0.45 gramme limit. If a patient is found to react badly to higher doses than 0.45 gramme, it is the height of folly, then, to exceed that dose. Repetition of the same 0.45 gramme dose gives just as good results.

It has been found that on the average a course of 12 injections of N.A.B. is usually sufficient to reduce a strongly positive Kahn

to negative, in the course of four or five months from the commencement of the treatment. Given very favourable circumstances (e.g.) non-reacting cases, tolerating higher doses etc., this period of treatment might be still further reduced. To judge the results of N.A.B. treatment, it is always advisable to wait at least for a fortnight after the last dose, before doing a Kahn or Wassermann; and thereafter to do a confirmatory Kahn or W.R. at least after another fortnight (i.e.) a month after the cessation of N.A.B. treatment. A single test may not be reliable and it is always safer to rely on the average of two or more tests done at different times after the cessation of the treatment.

In moderately advanced cutaneous cases (C_2) the harmful effect of a reaction in advancing the course of leprosy to the next highest stage, should be borne in mind; and the treatment directed accordingly. The same precautions, as have been stressed upon in dealing with the previously mentioned type of cases, are necessary, though not to the same extent, in dealing with the type of cases now under consideration. These cases are not so prone to eye complications and this is no inconsiderable advantage. And the maximum safe dose for these cases may be placed at 0.6 grammes under favourable circumstances. But, if a case of this type has eye affections already, then N.A.B. is better withheld from such a case. The best criterion of a favourable response to the N.A.B. treatment, in these cases is a progressive retrogression of the lesions of leprosy. This indicates that the underlying syphilitic factor is being controlled, giving the natural resistance of the body a chance to deal with the leprosy infection.

Cutaneous cases of the first degree (C_1) or mixed neural and cutaneous cases of the same degree (N_1-C_1) usually stand N.A.B. up to 0.9 gramme doses, provided the increase in the dosage has been effected cautiously. The possibility of a "flare up" of leprotic lesions should always be kept in mind in dealing with these cases.

Neural cases of leprosy can be safely treated with N.A.B. provided the increase in the dosage is effected slowly and a watch is kept on the sedimentation index. A mild reaction in these cases should lead to the repetition for sometime, of the same dose as that which produced the reaction. By injudicious treatment, a purely neural case, may be converted into an early cutaneous case; and the possibility of this should be always kept in mind when increasing the dose of N.A.B. Treated with a little caution, the neural cases do stand quite well the N.A.B. treatment.

Sulpharsenol.—This is the next organic arsenical which is in general use as an antisyphilitic remedy. It is claimed by the manufacturers that it is less toxic than N.A.B. and others of its kind. Experience of its use in cases of leprosy, corroborates the claim of the manufacturers to a certain extent; but in advanced nodular cases, even the least toxic drug may precipitate a bad reaction and hence, the use of sulpharsenol in such cases should not be pushed incautiously. Comparatively speaking sulpharsenol is less reaction-provoking than N.A.B. but it is not therapeutically as active as N.A.B., and a longer course of treatment is necessary with sulpharsenol. Usually a course of 16 injections commencing with 6 centigrammes is necessary on the average, to reduce a strongly positive W.R. or Kahn to negative in the course of 5 or 6 months. There is a further advantage in the administration of sulpharsenol in that it can be given intramuscularly. In children and fatty adults, this is no inconsiderable advantage. But N.A.B. cannot be given intra-muscularly.

Avenyl Hg. 33.—(Burroughs Wellcome & Co's preparation) A heavy molecular preparation of mercury miscible with Hydnocarpus oil. As soon as this preparation was put on the market, high hopes were raised that it would prove to be the ideal anti-syphilitic remedy for syphilis in cases of leprosy. But practical experience of its use and comparative studies, with other preparations of mercury, particularly mercury salicylas, have shown that though it is costlier than mercury salicylas, it is not superior to the latter in therapeutic efficacy. The chief advantage of this preparation lies in the fact that as it is miscible with Hydnocarpus oil, both the diseases (viz.) syphilis and leprosy can be treated simultaneously by dissolving the required quantity of Avenyl in Hydnocarpus oil.

One quarter of a gramme of Avenyl is dissolved in 100 c.c. of the Hydnocarpus oil, and this oil is used subcutaneously or intramuscularly once a week. The dose ranges from 1 c.c. to 4 c.c. or even more, if the patient can tolerate it. In the average highly advanced nodular case (C_3) it is not usually possible to go beyond the 4 c.c. or 5 c.c. limit, as by the time such a dose is reached, lepra reactions and cutaneous or in purely neural cases, the dose can be gradually increased up to 8 c.c. I have even gone beyond this 8 c.c. limit in a few cases but they were purely neural cases and were in specially favourable circumstances as regards their food, exercise etc. This preparation is comparatively less reaction-provoking than the two arsenicals mentioned above.

Mercury Salicylate.—This preparation has been found to be equal to Avenyl in therapeutic efficacy and is considerably cheaper than the latter. It can be suspended in Hydnocarpus oil and the oily suspension can be used intramuscularly. Experimental trial with various strengths have shown $\frac{1}{4}$ grain of mercury salicylas in 1 c.c. of Hydnocarpus oil as the optimum strength. A higher strength than this is not well-borne, and a weaker one takes a longer time to exert any therapeutic effect. Advanced nodular cases (C_3) do not generally stand higher doses than 3 c.c. or 4 c.c. It is always safe to commence with $\frac{1}{2}$ c.c. and gradually increase the dose by $\frac{1}{2}$ c.c. until 4 c.c. is reached. By the time 4 c.c. is reached the patient will have acquired a certain amount of tolerance. Any how it is not advisable to exceed $4\frac{1}{2}$ c.c. in C_3 cases. There might be a few C_3 cases who are capable of standing higher doses; but even such cases suffer from lepra reactions when the dose exceeds 5 c.c. and therefore it is better to proceed very cautiously. Less advanced cutaneous cases (C_2 & C_1) generally stand slightly higher doses say up to 5 c.c. or $4\frac{1}{2}$ c.c. and purely neural cases with sound kidneys stand up to 8 c.c. When using mercury salicylas in advanced nodular cases (C_3) a special watch should be kept on the eyes. Sometimes a bad reaction in the eye sets in and the patient complains of "smoky vision." Sometimes albuminuria sets in, and if this happens, the mercury salicylas should be stopped altogether until the urine is perfectly clear and free from all traces of albumin. In some cases severe stomatitis or neuritis sets in, and the mercury salicylas must be stopped in such cases, until they become free from these signs of intolerance to mercury. Usually at least from six to eight months' treatment will be necessary before a strongly positive W. R. or Kahn can be rendered completely negative.

In view of the strain imposed by mercury on the kidneys, it is always better to intermit the administration of mercury salicylas with intervals of pure hydnocarpus oil injections. For example, a course of eight or twelve injections of mercury salicylas may be followed by a four weeks' rest from mercury during which period only Hydnocarpus oil is injected. Three or four of such courses will be usually sufficient.

In spite of the efficacy of this preparation and its comparatively less reaction-provoking properties, there are C_3 cases (highly advanced nodular cases) who cannot tolerate even this preparation. For such cases Mercurochrome or Bismuth salicylas might be used or if available, Bisuene, Benzol Bismuth and other potent Bismuth preparations might be tried. The writer has not so far tried Benzol

Bismuth or Bisuene, and hence cannot offer any useful suggestions as to how to use them in cases of leprosy.

Mercurochrome:—A semi-complex organic preparation of mercury said to contain about 24% of mercury has been in use as a general antiseptic. In view of the very favourable reports on this preparation in recent medical literature, as the least toxic of all the preparations of mercury, it was considered worthwhile to try this preparation in cases of leprosy with a strongly positive Kahn. A one per cent. solution in distilled water given intravenously once a week, commencing from 3 c.c. and gradually increasing the dose up to 10 c.c. in an average sized Indian adult, was found to be well borne. It is very slow in its action as an anti-syphilitic, and although it is said to be the least toxic of all preparations of mercury, even such a small dose as 3 c.c. causes an appreciable reaction in some nodular cases of leprosy. It is therefore necessary to proceed cautiously even when using this comparatively safe mercurial. Syphilitic eye lesions seem to yield to small doses to exert a baneful effect on such lesions. *viz.*, more than 10 c.c. are apt 5 c.c. or 6 c.c. in some cases, stomatitis sets in, but usually such doses stomatitis is almost unavoidable, but in spite of this it is possible to continue the treatment for a year or upwards, provided the injections are given weekly, and a strict watch is kept on the sedimentation index.

At least eight months' continuous treatment is necessary before any tangible effect on the serological reaction can be obtained. But, such continuous treatment is not possible in the majority of cases of leprosy that are selected for treatment with this preparation (*viz.*, cases who could not stand other preparations of Arsenic or Mercury), as the onset of even a mild reaction, say a rise of temperature to 100° F., or an attack of leprosy neuritis or stomatitis leads the patient to absent himself or herself from the next injection; and as a result of such interruptions now and then, the course of treatment tends to be prolonged. On the average one year may be taken as the period of treatment absolutely necessary before any effect on the serological reactions could be obtained.

Albuminuria and organic or functional kidney lesions are contra-indications for mercurochrome therapy and it is therefore inadvisable to commence treatment with this preparation before the urine has been examined for albumin. Cases with incipient

tuberculosis of the lungs or the intestines are also bad risks for mercurochrome and it is therefore necessary to make sure that a case of leprosy before being subjected to mercurochrome, is free from these diseases. Pyorrhœa alveolaris is no contra-indication to mercurochrome therapy.

Lastly, it must not be forgotten that there is such a thing called idiosyncrasy to mercury. Some cases of leprosy there are who could not stand any preparation of arsenic or mercury. To treat the syphilitic factor in such cases is a problem that does not admit of any easy solution. For such cases, in the absence of the more potent and more costly preparations of bismuth *e.g.* bisuene, benzol bismuth, neotrepol and trepol, bismuth cream etc., in the order of their potency, I have tried the ordinary bismuth salicylas.

Bismuth Salicylas has been used in an oily suspension, in pure olive oil (free from fatty acids) 1 grain in 1 c.c. Dose 1 to 7 c.c. intra-muscularly once a week. This is very slow in action, and a prolonged course of treatment, say, for a year, is necessary before any noteworthy effect can be obtained. Continuous treatment with bismuth salicylas is not possible, as in doses of 4 c.c. or upwards, stomatitis sets in, and the treatment has to be interrupted. One great disadvantage of bismuth salicylas is that it cannot be suspended in hydnocarpus oil as such suspension sets up lepra-reaction when injected. It is for this reason, pure olive oil has been used by me; and olive oil is bland and non-irritating and has been proved to have no effect in leprosy. The dose should be gradually increased by $\frac{1}{2}$ c.c. each time until 5 c.c. is reached. By this time stomatitis usually sets in. If not, the dose may be increased up to 7 c.c. I have not so far given more than 7 c.c. and few cases of leprosy could stand such high doses for any length of time. Even when 5 c.c. is given, stomatitis invariably troubles the patient. If stomatitis does not set in, the onset of leprosy neuritis necessitates the stoppage of bismuth. Even this bismuth salicylas is not tolerated by some cases of leprosy, specially the mixed (highly advanced cutaneous and acroteric neural) C₃-N₃ cases with eye complications. Such cases generally do not stand more than $1\frac{1}{2}$ c.c. to 2 c.c. Induration at the site of injection (bismuth salicylas is very slowly absorbed) necessitates interruption of the weekly injections; and individual idiosyncrasy to bismuth is a factor not to be forgotten.

THE LABORATORY DIAGNOSIS OF VENEREAL DISEASE

BY

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In the diagnosis and treatment of disease and the advancement of science, the laboratory has assumed more and more importance than before. Formerly the clinician used to depend mainly upon himself for diagnosis and treatment. If at all he sought the help of the laboratory worker, he did so either with a view to confirm his observations or as a matter of curiosity. As a result the two different types of workers were in water tight compartments.

With the rapid advance of bacteriology, bio-chemistry and pathology, the laboratory worker has come to occupy a place next to the clinician. He is frequently sought by the latter not only to confirm the clinician's observations but very often to form the diagnosis itself when the physician or surgeon is entirely at his wit's ends; moreover the effects of treatment and the progress of a case depend very often upon the laboratory report.

Without, therefore, detracting from the value of clinical observation, which stands in a class by itself, it is not too much to say that laboratory tests and observations have come to occupy a front rank in medicine—and in no other part of medicine is the laboratory so frequently sought as the scourge of venereal disease.

GONORRHOEA

The practical diagnosis of gonococcal infection by laboratory methods is based upon the direct demonstration of the gonococcus microscopically. With a proper technique, a positive diagnosis is justified from the microscopical examination of the discharge alone. The demonstration of the organism in the discharge is very easy in acute and sub-acute cases of gonorrhoea, while it may be difficult in chronic cases. The difficulty experienced in these chronic cases is due to the fact that the organism may remain in the various glands of the genito-urinary tract for a long time, so that if special care in examining the secretions of these is not taken, it is very likely a negative report may be given. Hence, in collecting material for this purpose in a case of chronic gonorrhoea, attention will have to be directed to the prostate, seminal vesicles, Cowper's glands in the male, glands of Bartholin and cervix in women. The second reason why a negative finding in a chronic case has to be interpreted with

caution is that owing to pronounced secondary infections which is common in these cases, the eye is liable to be deceived. Lastly the gonococci may be lying latent, and may not be actually discharged at the time of examination with the result, that even with proper technique the organism cannot be demonstrated.

The gonococcus is recognised by certain characteristic features. It is a diplococcus having a characteristic "two kidney" appearance and is situated intracellularly in the definitely purulent stage of acute gonorrhoea; but in the early acute stage, the organism is mostly situated outside the pus cells in clumps, whereas in the chronic stages the organism is distributed irregularly in the exudate. Simple staining methods are of no use in distinguishing the organism, since by such methods it is very readily confused with certain other organisms which may be found inside the leucocytes in the discharge. Gram's method of staining is particularly of use since most of these organisms engulfed by the leucocytes are Gram positive, and hence can be very readily excluded from the Gram negative gonococcus.

The original Gram's method is very rarely used now. The constant attention which had to be given to the reagents employed in this method was overcome by the much simpler modification of this method *e.g.*, Jensen's. With this modification the results are more constant with less of care.

JENSEN'S METHOD.

The Technique.—

1. Make a thin film of the exudate; fix in flame and allow it to cool. The film must be a thin one, otherwise decolorization will be difficult.
2. Apply 5% Aq. Methyl Violet and allow it to act for $\frac{1}{2}$ min.
3. Pour off the Methyl Violet solution and wash away the remainder with strong Lugol's solution which has the following composition:—

Iodine.	... 1 part
Pot Iodide.	... 2 parts.
Water	... 100 parts.

Do not wash with water.

4. Pour on the film strong Lugol's solution and leave it in contact for $\frac{1}{2}$ to 1 minute.

5. Wash off Lugol's solution with *absolute* alcohol and pour fresh *absolute* alcohol (98%) rocking to and fro, renewing the alcohol until decolorisation is completed. Never use alcohol for more than 2 minutes. Weak alcohol decolorizes Gram positive organisms.
6. Apply to the film neutral red solution made up as follows, without intervening washing with water.

Neutral red	...	1 gm.
1% Glacial Acetic Acid	...	2 c. c.
Distilled water	...	1000 c. c.
Let this act for	...	1 minute.

The counterstain must neither be too concentrated nor allowed to act for a long time since it tends to decolorize Gram positive organisms.

Gently wash neutral red with distilled water, dry between filter paper and examine.

In interpreting the results, one has got to remember the fact that Gram positive cocci when phagacytosed and partially digested by leucocytes may lose their Gram positive character. This feature must be borne in mind since in chronic cases of gonorrhoeal infection, there is a tendency for secondary infection, and when these organisms are decolorised, they may be readily confused with gonococcus. But such cocci can be distinguished by their having a vacuole round them within the phagocytic cells.

ASHESHOV'S MODIFICATION OF GRAM'S STAIN.

The reagents used are :—

1. (a) Saturated solution of crystal violet in alcohol.
(b) 1% Ammonium oxalate solution.
Mix 2 c.c. of (a) with 8 c.c. of (b).

2. Lugol's solution.

Iodine	...	1 Grm.
Pot. Iodide	...	2 Grms.
Distilled water	...	300 c.c.

Throw away 60 c.c. of this and replace by 60 c.c. of 5% Sodium Bicarbonate solution.

3. Pure Acetone.
4. A dilute solution (in distilled water) or carbol Fuchsin 1 in 20.

Technique.—

- I. Stain with No. (1) for one minute.
- II. Wash in distilled water.
- III. Stain with No. (2) for 1—2 minutes.
- IV. Blot just to make the film moist; but do not wash in water.
- V. Decolorize with acetone for a few seconds.
- VI. Blot to dryness.
- VII. Stain with No. (4) for a few seconds.
- VIII. Wash and dry and examine.

Gonococci appear as rosy pink organisms.

Gram positive organisms are bluish in colour.

This method is supposed to be absolutely fool proof. As acetone is used for decolorisation instead of alcohol it is claimed that there is no chance whatsoever of gram positive organisms being decolourised, as some times occurs when Jensen's method is not carefully done.

SYPHILIS.

The demonstration of *Sp. pallida* in the secretion from all the earlier, including the secondary types of syphilitic lesions is such a comparatively simple procedure that it should be made use of wherever possible in the early diagnosis of syphilis. In fact it will be the only means at our disposal when a case is doubtful clinically before any serological evidence of syphilitic infection occurs.

Dark Ground Illumination.—The method of choice is to examine microscopically the material under illumination by which the rays of light from a powerful light directed by a special condenser which strike it obliquely. By this means all the solid objects in the specimen are illuminated, while the background is dark. Hence this is called dark-ground illumination. Examined under dark ground illumination, *Sp. pallidum* appears a bluish-white, delicate, cork-screw-like organism, with evenly rounded coils. There are about 7 clearly defined coils to the width of a red-cell and this is taken as a standard.

It must be remembered that the length of the organism is of no significance for distinguishing it from other spirochætes since it is a variable factor (4 μ to 24 μ). It twists on its own axis and can be seen sometimes bending to an acute angle; but it is slow in its movement from place to place.

The steps of examination :

1. Take a drop of the exudate on a clean slide and put a coverslip over it.
2. Rack up the condenser till it is on a level with the microscope stage and examine the top of it using a low magnification (2/3 in obj. and No. 2 eyepiece). Two rings marked on the top of the condenser will be seen and the condenser is manipulated until the rings are worked up to the middle of the field.
3. Place the slide on the stage and put a drop of oil between the slide opposite the specimen and the condenser taking care that there is no air bubble in the oil between the slide and the condenser.
4. Move the condenser up and down until the bright spot of light seen in the specimen is made as small as possible.
5. Put a drop of oil on the coverslip and examine with 1/12 objective.

To obtain good results by this method, attention to the following details is essential.

- i. Before collecting the material, the sore must be cleaned well with saline and the serum got by squeezing. The contaminated discharge on the outside is no good.
- ii. No antiseptic must be used. *Sp. pallida* has got a short life outside the body and is easily destroyed by feeble antiseptics.
- iii. Avoid bleeding during manipulation since it lessens the chances of finding spirochaetes.

The one essential condition for the employment of the above method is, that the specimen must be examined immediately. In cases where the patient cannot attend the laboratory, special staining methods have got to be employed to demonstrate the organism in the specimen. It stains with great difficulty, the most convenient methods employed being Giemsa's modification of Romanowsky's stain which stains it rose-pink, or some method in which silver nitrate is used, such as Fontana's stain, by which it is stained black.

Giemsa's Method.—The proper technique is as follows:—

- i. Smear of the exudate is made and allowed to dry in the air; fix in methyl alcohol for 3 minutes.

- ii. Pour over the film the staining solution (It is prepared by diluting 1 drop of concentrated stain with 1 c.c. of neutral distilled water). Allow it to act for 3-6 hours.
- iii. Wash in water and examine.

In adopting the above procedure the following precautions should be taken.

1. The film must be very thin and even.
2. Never fix it by flame.
3. Never use tap water for diluting the stain. Distilled water is faintly acid and it interferes with the action of the stain. If it is acid, it must be made neutral by the addition of traces of sod. carbonate solution (1%).
4. Never shake the solution as this precipitates the stain, and so impedes the action.
5. The stain must be diluted just before use, since the diluted stain will not keep.

Silver nitrate method for smears.—Tribondeau's modification of Fontana's stain is the best.

1. A thin film of the secretion is made and allowed to dry in air.
2. Fix the film in formol-acetic solution.

Formalin (40%)	...	2 c. c.
Glac. Acetic acid	...	1 c. c.
Dist. Water	...	100 c.c. for 1 to 2 minutes.

Pour. fresh quantities once or twice.

This must be allowed to act sufficiently long to dissolve out the hæmoglobin present in the blood corpuscles in the film.

3. Pour away the fixative and cover it with methyl alcohol and flame it.
4. Treat the film with the following tannin mordant.

Fresh Tannic acid	...	5 gms.
Distilled water	...	100 c. c.

Heat gently till steam rises and allow to act for 30 seconds without further heating.
5. Wash thoroughly for 30 seconds in tap and then wash with distilled water.

6. Pour Fontana's silver solution made as follows:—

To 5% solution of silver nitrate add drop by drop, Liquor Ammonia Fortis B. P. A precipitate forms and will re-dissolve. Add carefully more liquor ammonia until a slight opalescence is produced in the solution.

Allow this to act for a few seconds in the cold. Pour off and add fresh silver solution and gently heat and leave it for further 15 seconds.

7. Wash in distilled water for a few seconds (not in tap water), allow to dry in air and examine.

Levaditi's Method.—Histological examination of tissues with a view to demonstrate the *Sp. pallidum* in sections will be useful in certain cases when the nature of the lesion is doubtful. It is done by means of Levaditi's silver impregnation method as follows:

1. A bit of the suspected tissue 1 to 2 mm. in thickness is fixed in 10% formal saline for 24 hours.
2. It is washed well in water and then placed in 96% alcohol for 24 hours changing the alcohol 2 or 3 times.
3. Place in distilled water until the tissue sinks.
4. Place in 2% fresh distilled water solution of silver nitrate for 3—5 days at 38° C.
5. Wash thoroughly in distilled water until all the silver solution is removed. This is a very important procedure and must be done thoroughly.
6. Place for 48 hours in the following solution.

Pyrogalllic acid	...	4 gm.
Formalin	...	5 c.c.
Distilled water	...	91 c.c.
7. Wash in distilled water and then dehydrate in alcohol and embed in paraffin.
8. Cut section and mount in balsam. The sections may be counterstained with neutral red, but this is not essential. Spirochaetes appear as dark screwlike organisms.

The above are the methods employed nowadays in the laboratory for the diagnosis of syphilis and gonorrhoea.

A MODIFIED METHOD OF STAINING SPIROCHAETE WITH GIEMSA STAIN.

BY

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VARIOUS methods of staining slender spirochaetes have been employed without much success. In reality they are very difficult to stain and aniline dyes do not stain them at all unless previously treated with mordants. Whereas when they are stained after Fontana or any other approved method, they are apt to be confused with artifacts; as anything left on the back-ground stain as well as the spirochaetes and there is practically no contrast to differentiate them from the stained background.

On the other hand, fine structures such as blood cells that escape along with serum are either masked or destroyed and so the relation of the spirochaetes to these structures cannot be observed.

Adachi's modification of Giemsa which was originally used to stain the end flagellum of *Spirillum minus* is not without this fault; as also the ordinary Giemsa stain; as the blood cells are never clear and prominent due to a mask of debris.

To overcome the above difficulties the author of this paper undertook a series of experiments and very successful results were obtained after staining in the following method, using secretion from Yaws lesions, rich in *Treponema pertenue*.

Technique.—

- (1) Having rubbed the sore, clean with a pledget of cotton-wool; wait till some clear serum exudes; collect a drop or two of this on a slide which should be scrupulously clean. Spread the serum with a needle or a fine glass-rod to make a thin film and allow to dry.
- (2) Fix and deglobulinise it with the following solution:—

Glacial acetic acid	...	1 c.c.
Formalin (40 %)	...	20 c.c.
Distilled water	...	100 c.c.

The solution should be changed several times in the course of a minute thus washing away debris and fixing the film at the same time. Wash thoroughly in tap and finally in distilled water.

If there is the least bit of suspicion pointing that way—in spite of a Negative History, or the absence of any definite clinical signs or that the patient has undergone a so-called ‘Cure’—insist on a Blood Examination to detect any ‘poison’ that may be there, and in many instances it will be found to have been worthwhile.

A few instances may be here cited:—

Case 1.—A married woman, tolerably nourished, came with the record of having undergone three operations for Tubercular glands of the neck. This time, too, 4 days after the operation, the blood was tested for, and the report of W. R. $\frac{1}{10}$ & Kahn $++$ justified the suspicion.

But that created a ‘situation’ with the husband—he was simply furious with the finding. After a good deal of persuasions, he was prevailed upon to get his blood also examined, and that was found to be $\frac{1}{10}$ W. R. & Kahn $+$; it was not till then that any ‘history’ could be had. Both underwent a course of treatment and have not been heard of since.

Case 2.—A well nourished woman with a sinus in the left side of the neck, with glands about, came for advice. The diagnosis was so infallibly straightforward, that although a Von Pirquet’s test was performed, they did not stay their knife for its findings. She was operated on and the negative report was valued at for what it was worth. The wound failed to heal by first intention. After a few days the blood was sent for Wassermann’s test and was found to be $\frac{1}{10}$ positive. Sulpharsenol injections brought on a rapid healing. The history of 3 previous abortions was admitted later on.

Case 3.—Apparently a case of soft sore, had the blood tested for Wassermann reaction and was found to be $\frac{1}{10}$ W. R. & a $+$ Kahn. He was advised to have the blood re-examined after a provocative injection of Neosalvarsan. But as the sore had healed up in the meantime, the suggestion was ignored. Soon after, he developed lumbago (?) and that was followed by ‘rheumatic’ pains in various parts of the body. After exhausting the resources of the pharmacopœia, he had the provocative injection, and that acted as a therapeutic test as well—the long wanted relief was obtained even with

that injection. W. R. result proved to be $\frac{1}{10}$ positive; with Kahn $+++$. He went through a course and has not had to look back yet.

Case 4.—Irregularly diagnosed as a case of Leprosy with suspicious looking patches on the forehead and cheek. W. R. was found to be $\frac{1}{10}$ and Kahn $++$. As no improvement was noticed even with 4 injections, this case nearly gave up the specific treatment, but better counsel prevailed in the end and he is a happier man now.

Case 5.—This case was a $\frac{1}{10}$ positive W. R. and Kahn $++$; but as with 3 injections of N. A. B. the eruptions disappeared, he was declared cured by his doctors. 12 months later, suspicious sores developed and the W. R. was found to be $\frac{1}{10}$ and Kahn $+++$. He went through a full course and is waiting for further advice.

Instances, similar to above, are, I am sure, the every day experience of the profession. Seeing that the ‘history’ is, generally, of no material help, and that the clinical manifestations are sometimes deceptive and that there are no means of gauging the effectiveness or otherwise of a course of treatment, the supreme importance of these tests is only too evident.

It is preferable to have both the tests performed simultaneously, as a sort of check. If both prove positive, go for the specific treatment. If both are only very weakly so, and the clinical evidence is suspicious, repeat the test after a provocative injection of Neosalvarsan and be advised by the result. If both are negative look for something else. If they differ—and we have seen this in hereditary cases, where with a $\frac{1}{10}$ or even $\frac{1}{100}$ W. R., Kahn has given a negative or at best a doubtful result, the W. R. findings have been acted on with advantage; we have, however, not come across a strongly positive Kahn, with a negative W. R. in untreated cases.

As regards ‘cures’—continue treatment till W. R. proves negative—we may here mention that Kahn seems to persist longer than the W. R. Generally the patient is advised to get his blood examined 3 months after the cessation of all treatment; if found negative, he is told to wait for 6 months without any treatment and get the blood retested after a provocative injection; if still negative, he is to get it repeated after one year and again after two years before he is declared free. If during any of these exami-

nations a positive finding is obtained, the treatment has to be undergone over again.

If doing a W. R. test, always include a known positive and a known negative in the series to check results. Where arrangement for ice is not possible it will be found that serum kept in contact with clots will keep a little better than the separated serum, for future use. The complement has to be fresh i.e., the guinea-pig's blood has to be drawn the day before. It does not keep unless preserved frozen hard, nor should the guinea-pigs have too much of greens as fodder or the complement would give a very poor titre. The patient's blood should be drawn when he is fasting or at least not within 4 hours of a meal, which should better not have much fatty substance in it.

As regards the provocative injection, we usually advise a 0.3 to .45 gm. of Neosalvarsan injection, and then draw the blood on the 7th day for examination.

Finally, I have to acknowledge that I have drawn largely from Harrison for my guidance.

THE VALUE OF KAHN TEST IN SYPHILIS.

BY

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IF we analyse the steps of Wassermann Reaction we will find that when antigen is mixed with its appropriate antiserum, a precipitate is formed, which remains invisible but can be seen by ultra-microscope only. When in this mixture some amount of complement is added, the precipitate which remains invisible at first can be made visible. The hæmolytic amboceptor and washed sheep's cells act as indicator only and do not help materially in the formation of precipitates. Thus we see that the Wassermann Reaction depends substantially upon the mixing of antigen and antiserum alone, and that various precipitation tests for syphilis are all derived from the Wassermann Reaction.

Of all the precipitation tests the Kahn's test is very reliable and easy to perform. It requires no very elaborate arrangement. In village laboratories it should be soon introduced as a ready means for diagnosis of syphilis. All that we require for Kahn's test are the serum from a patient and a suitable antigen. The

proportion of mixing the antigen to the serum must be in the ratio of 1:3, 1:6, and 1:12 and the serum must be in excess.

A rack containing three parallel rows of test-tubes is arranged and into which .05 c.c., 0.025 c.c. and 0.0125 c.c. of dilute antigen are poured from before backwards. Then 0.15 c.c. of inactivated serum is added to each of them. The tubes are then shaken vigorously and put in a water-bath for 15 minutes. Saline is to be added next in the proportion of 0.5 c.c. to each of the tubes. They are again shaken and then allowed to stand in room temperature for five minutes. After that the reading is taken in good light. Brilliant yellow flocculi is the positive reaction and dull yellow opalescence is the negative reaction.

We have seen that instead of taking .05 c.c., .025 c.c., and .0125 c.c., if we take .1 c.c., .05 c.c. and .025 c.c. respectively of the antigen and add .3 c.c. of serum into each tube, we get better results.

The value of this test in the diagnosis and treatment of syphilis has been studied by the League of Nations. In all 537 cases were studied along with the Wassermann Reaction, and it has been conclusively proved that though W. R. test is the best, yet the Kahn's test closely follows the W. R. and even gives positive reaction in some cases where the Wassermann reaction fails. The Kahn's test does not appear as early as the Wassermann reaction but it lasts longer. Hence it will not be out of place to say that the Wassermann reaction is for diagnosis and the Kahn's test for the treatment of syphilis.

The applications of the Kahn's test in medicine are two-fold.

(1) **It helps in the diagnosis of Syphilis.**—A case can be diagnosed as syphilitic easily when the physician gets ready at hand the results of both the tests together with the information of the history of syphilis. But it often happens that when the Wassermann reaction is negative and the Kahn's test shows either four plus or three plus reaction, the physician becomes confused. In those cases, we should suspect syphilis but we cannot swear to be positive in our diagnosis—or in other words *those cases require further treatment*. When the Wassermann reaction is negative and the Kahn's test gives either two plus or one plus reaction the case at hand is doubtful. That is, we should not doubt the result but the interpretation.

(2) **It helps in the continuance of the treatment of Syphilis.**—When the W. R. is negative and the Kahn's test is still showing a slight precipitate reaction, the treatment should be continued. That is,

three negative Kahn's tests together with negative W. R. will go to prove that the case is completely cured of syphilis.

Thus we see that we can expect a patient's serum to be positive to Wassermann reaction and negative to Kahn's test and vice-versa. A well equipped laboratory should give the result of both the tests, and a good medical man should use his acumen to interpret correctly from his clinical examination and the laboratory report, the diagnosis and the prognosis of syphilis. It will not be out of place to mention that Prof. Charu Chandra Basu Carmichael Medical College Hospitals, should be tested for Wassermann reaction as well as Kahn's test.

JARISCH HERXHEIMER REACTION IN THE TREATMENT OF SYPHILIS.

BY

P. L. DESHMUKH, M.D.

Poona.

THOUGH Jarisch Herxheimer Reaction is a constant danger in the treatment of syphilis, it ceases to be so in practice by reason of its rare occurrence. My aim in presenting the following short resume of the literature on the subject is not to frighten my colleagues by the "bogey" of the above reaction, but to make the general practitioner acquainted with the rare phenomenon with which he may have the misfortune to meet during his medical practice.

There is no doubt that a revolution has been created in the treatment of syphilis by the introduction of Arsenobenzols in the physician's armamentarium. Salvarsan was discovered at a time when the world was hypnotized by the German culture. The discovery of Salvarsan in 1910 by Prof. Paul Ehrlich and Hata was heralded as the cure of syphilis. Ehrlich himself thought that it was capable of producing complete sterilization of the body—Therapia Sterilisans. But soon afterwards as the drug was being given almost a universal trial, the idea that it is a cure for syphilis began to undergo serious modification. With further experience of the drug, the truth slowly dawned that the treatment abounds in grave complications like hemiplegia, nerve palsies, cutaneous eruptions etc., etc. It became realised that arsenic is not a cure

for syphilis as was believed. The apparent cure is due to the dramatic spirochaeticidal effect after exhibition of arseno-benzols, which is unfortunately transient. Arsenic is slow in attacking the spirochaetes buried in deeper tissues while its rapid spirochaeticidal power in more superficial tissues may be judged by examination of secretion from surface lesions before and after administration of arsenobenzols. So far from curing, arsenobenzols render active syphilis latent under continuous and efficient treatment. Thus, the development of protective immunity has been paralysed by the sudden spirochaeticidal effect of the drug while the drug itself has been insufficient to destroy syphilitic foci in the deeper tissues.

The latency of the syphilitic infection may be revealed in many ways. It may manifest as "Neurorecidives" or Neuro-recurrences. These occur after an apparent cure of syphilis. It has been lately recognised to be, in fact, recurrence of latent syphilis—glare of the choked up fire. The phenomenon consists in isolated paralysis of cranial nerves and appears some days after Salvarsan injections. It was ascribed to toxic effects of arsenobenzol treatment, but the fact that the phenomenon used to appear in a syphilitic even before arsenobenzols were introduced in the treatment goes to negative the belief.

Other manifestation of the latency of the syphilitic infection is the Jarisch Herxheimer Reaction. It is a reactivation phenomenon, also known as Biotropism. If the treatment with arsenobenzols is started in a case where syphilitic process has become latent, or when once started, it is not persisted with maximum doses, the dormant forms assume activity and thus give the Jarisch Herxheimer Reaction. The reaction is not peculiar to syphilis alone; it is also met with in other diseases. For example, a single dose of Neosalvarsan given as a tonic may stimulate a latent malarial or streptococcal infection to activity. The reactivation phenomenon in syphilis was first brought to notice about three years back by Jadossohn and Jarisch who describe intensification of syphilitic roseola under the influence of injections of Grey oil. The importance of the observation was not realised until the frequent occurrence of temporary augmentation of cutaneous or other symptoms under 606 or 914, drew attention to the fact. Herxheimer's work on this subject led to his name being associated with that of Jarisch and the phenomenon became known as Jarisch Herxheimer Reaction. Arsenic and particularly the trivalent arsenical compounds appear to be the commonest biotropic thera-

peutic agents. But Mercury and Bismuth also are not infrequent offenders.

The immediate effect of antisyphilitic remedy in a latent case is to increase the intensity of the syphilitic process. Thus, if an endartery supplying a vital organ is partially blocked by syphilitic endarteritis, then the temporary augmentation of the syphilitic process may cause a sudden complete blocking with sometimes disastrous results as in the case of a cerebral or coronary artery.

The Jarisch Herxheimer Reaction usually occurs sometime after the second or third dose but only if the infection is a generalised one.

The manifestation of the reaction consists of the following three main types of symptoms:—

- I. Cutaneous symptoms.
- II. Cerebrospinal symptoms.
- III. Visceral symptoms.

The cutaneous group consists of exaggeration of cutaneous and mucous membrane signs which may also be accompanied by a roseolar rash resembling that of Scarlatina.

The cerebrospinal group consists of the following clinical types:—

- (1) The symptoms often consist of hæmorrhagic encephalitis which usually end fatally.
- (2) The symptoms may start with a serious head-ache after the injection and end in a clinical picture of Status Epilepticus.
- (3) Symptoms of hemiplegia and paraplegia may suddenly set in after an injection.
- (4) Paralysis of various cranial nerves is frequent. The facial and auditory nerves are the most commonly affected. Oculomotor paralysis is also common.
- (5) Symptoms of acute spinal thrombosis resulting in transverse myelitis may appear.

The visceral group consists of degenerative changes in the liver, kidneys and the heart. The condition of the liver resembles that due to acute yellow atrophy and arsenical poisoning. In the case of kidneys, the reaction gives rise to albuminuria, which is an early symptom. In the case of the heart, blocking of an artery supplying A-V. bundle by endarteritis may cause sudden heart-

block. Similar blocking of a coronary artery may end in sudden stoppage of the heart.

It will be seen from above that the manifestations of the J.H. Reaction in the various organs resemble very closely the toxic effects of arsenobenzol treatment. From the stand-point of treatment it is essential to make a distinction between the two which is not always easy. The former is known to improve under more intensive arsenical treatment instead of getting worse as in the latter case.

Following two cases noted by L. W. Harrison in this connection may be found interesting. One, which gave alarm on this account, is that of a patient who developed hemiplegia after the third injection. Treatment was continued on his recommendation and patient recovered completely. Another case is that of a patient suffering from syphilitic meningitis who rapidly became worse 48 hours after the first injection. Unfortunately when the severe symptoms commenced, another dose was not given. If this had been done, it seems probable that the increased activity of syphilitic organisms would have been brought quickly to an end.

In a case seen by me, paralysis of the third cranial nerve had occurred after the third injection. These injections were given at weekly intervals but after a lapse of about six months in the treatment with the same drug for three weeks. The paralysis slowly improved under more intensive antisyphilitic treatment. A probable diagnosis of a small gumma pressing on the third cranial nerve can be excluded in this case on the ground that it is unlikely for fresh gummata to appear when the antisyphilitic treatment is already in progress.

Recently, Hargraves has reported in the Lancet (25th Feb.) a case of J. H. Reaction where acute spinal thrombosis is said to have occurred during the treatment of primary syphilis with novarsenobillon within 24 hours after the second injection. The treatment with novarsenobillon was pushed on accompanied by 50 gr. of pot. iodide three times a day and colossal mercury 5 c.c. intramuscularly at weekly intervals. Gradual recovery ensued to a great extent within six months' time.

The causation of the symptoms may be explained in the following ways:—

- (1) By augmentation of the syphilitic process by inadequate dosage of a spirochaeticidal drug.
- (2) By increased intracranial tension caused by dilation of

capillaries as an evidence of intensification of therapeutic conflict between the activated virus and the drug used.

- (3) By the effects of endotoxins liberated from spirochaetes destroyed by a specific spirochaetocidal agent.

Treatment.—The reaction may be avoided by being on the guard by remembering the possibility of such a phenomenon and secondly by advising treatment before the infection becomes latent either with inefficient treatment or without any treatment in the course of time. Long lapses of period between the injections should be avoided when once the arsenical course is started as the reaction is likely to follow the resumption of treatment following such a break.

Curative treatment is rarely of any avail. Cases with severe intracranial symptoms usually end fatally before anything could be done for them. In those who survive it is a good plan to intensify the treatment with the same drug after a correct diagnosis. Adrenaline injected repeatedly may help. Colloidal iodine and intramine may also be useful.

In the end, I express my indebtedness to the different authors whose articles have supplied me with the necessary information.

THE BEHAVIOUR OF THE DIFFERENT ANTISYPHILITIC REMEDIES

BY

N. SINHA, M.B., B.S.

Hon. Pathologist, P. W. Hospital, Calcutta.

The remedies commonly used in the treatment of syphilis are the various preparations of Arsenic, Bismuth, Mercury, and Iodine. The actions of these are different from one another with individual peculiarities and are not similar as is too often supposed to be. Therefore for successful treatment it is essential to know exactly what each one does and in the light of this knowledge prepare the plan of action most suitable for the particular case, otherwise the results may be not only disappointing but even disastrous.

In this article, I, therefore, propose to survey briefly the behaviour, indications, and contraindications of each one of them; but before passing to the particular ones, some general principles may be considered with advantage.

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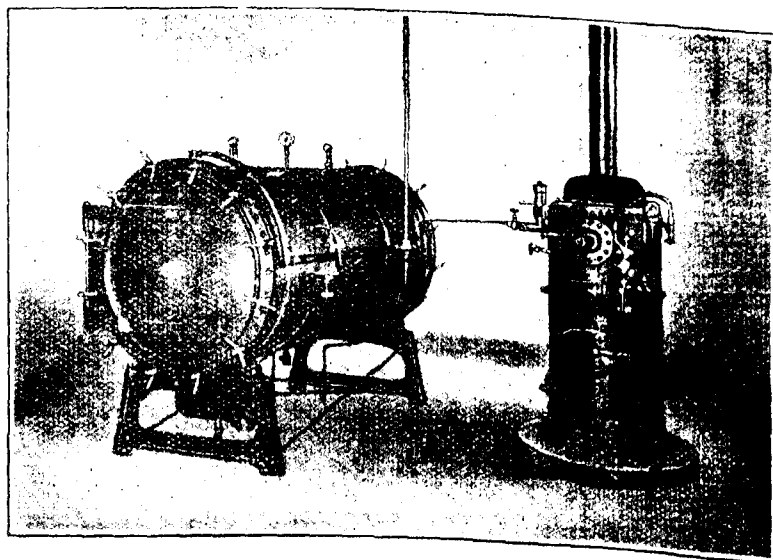
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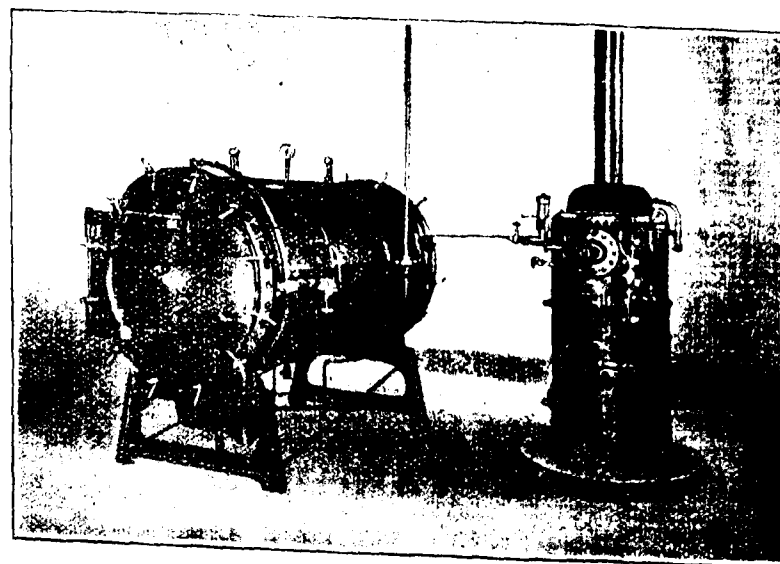
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1. **Physical Examination.**—Given that the laboratory diagnosis is positive, it is necessary before starting the treatment to make a thorough physical examination of the patient, because at best the laboratory can only tell whether an individual has got a syphilitic infection or not, it cannot say in what phase the disease is, what organs are impaired in function or altered in structure, and whether a given abnormality is the result of the syphilitic infection in him. It is only this examination that can help us in forming an opinion as to what he has got, what he needs, and whether or not he can take it.

2. **Aim.**—We all know that it is not possible to cure every case of the disease in the true sense of the word, and sometimes we have to be contented with arrest of the further progress or even simply with the amelioration of the symptoms, so that the ultimate aim in any given case is to be defined from the start.

As most of the syphilitic infection is acquired in youth when the individual is in good health and free from the disabilities of later life for which syphilis itself is mainly responsible, and is in a position to tolerate so to say a therapeutic assault fairly well, the aim in such cases is obviously a cure and intensive and systematic treatment with routine courses are justifiable. The position is entirely different in late cases and for these utmost consideration is to be given to the individual susceptibilities. Therefore the teaching is—"Incline to system in early and individualisation in late syphilis."

3. **Benefits and risks.**—If properly used, the modern antisypylitic remedies can do immense good to the sufferer, but their injudicious administration is fraught with grave dangers, and hence we have to weigh very carefully the probable risks and benefits of a particular treatment in a given individual. For instance, application of drugs that will be perfectly appropriate in a latent case may prove catastrophic if given to a person having, say, slight aortic regurgitation with anginal attacks. To come to a right decision in this respect we have to take the following facts into consideration:—

- (a) *The time elapsed since the disease was contracted.*—Early in the course the person is in a very infective condition and from the public health point of view one should try to make him non-infectious as early as possible and hence choose the most rapidly acting drugs. In late cases there is no fear of transmission and we can

take recourse to the less speedier remedies and this is all the more desirable at least at the beginning of the course, for the visceral complications likely to be present in these cases might result in dangerous reactions with the rapidly acting drugs.

(b) *Age of the patient.*—Treatment is also influenced to a certain extent by the normal expectancy of the life of the patient. For instance taking a young and a middle aged man with the disease of the same duration and serologic picture, we should give a more thorough treatment to the younger one, because during the extra time that he is normally expected to live after the infection he might develop some grave cardio-vascular manifestation, which may not have time to develop in the case of the older person.

(c) *Appraisal of functional impairment or structural changes in a patient with advanced syphilis is very important.*—Neglect to take this into consideration while selecting the remedy may hasten the end rather than extend life.

(d) *Tolerance.*—Under this head we consider the natural idiosyncrasy of the patient, and his susceptibility to a particular drug due to a correlated or independent disease in some organ, e.g., heavy metals in chronic renal disease.

Having discussed the preliminary considerations, I proceed on to describe the actions and uses of the individual antisyphilitic remedies.

ARSENIC.

The preparations of arsenic generally used for this purpose belong to the Arsenobenzol group of drugs. Of these salvarsan (606) and neosalvarsan (914) are administered by the intravenous route, and sulpharsenol and myosalvarsan are given intramuscularly.

They all destroy the *spirochæta pallida* outright when exposed to them either in the tissues or in the blood stream, and are the most powerful spirochæticidal agents that we possess. These and especially the intravenous ones are also the speediest in action. Levy has shown that the lead in effectiveness and speed of the arsenobenzols over their nearest competitor bismuth is four to sixteen times, and a single dose has caused the disappearance of the spirochætes from the surface lesions within a period of 24 hours. They are therefore the remedies of choice for the treatment

of the early cases, as they control the infectiousness of the disease with the least possible delay, as also during this period the spirochætes are in relatively accessible parts of the body for the drug to come in contact.

The next most important property of the arsenobenzols is their power to induce rapid healing of the syphilitic sores. This at once makes them very attractive both to the physician and the patient.

Another remarkable property is their tonic effect, due chiefly to their arsenical content. The combined tonic and healing property of the drug though very useful has the practical drawback that it makes the average unintelligent patient, especially in India, stop treatment too early. They think that the healing of the sore means cure, more so when accompanied by a sense of general well being. Disregarding the above, the real shortcomings of the arsenobenzols are:

- (i) The intrinsic toxic action of the compounds, which make their use impossible in certain cases.
- (ii) Their general failure to stimulate or reinforce immunity. As they kill the spirochætes outright they deprive the body of the stimulus necessary to produce active immunity, viz., the pathogenic agent. The danger of incomplete treatment, therefore, is that he is not only without cure but without defence as well, and sometimes he is left in a state of allergic susceptibility, so that any relapse due to unextinguished infection assumes serious characters. This probably is the background of the increasing frequency of neurosyphilis seen early in the course of the infection, and explains to a certain extent the arsenic fastness, and Wassermann fastness of the subjects. It is therefore imperative to administer the drug to more or less the theoretical maximum, and reinforce its action by one of the heavy metals.
- (iii) Therapeutic shock, often called Jarisch-Herxheimer reaction is probably the commonest pitfall in syphilotherapy by the arsenobenzols. It consists in the flare up of the disease by the first or even the first few injections. The explanation is that these rapidly acting spirochæticides stir up and destroy the organisms and thereby produce sharp focal reactions with oedema.

Now if this is only a flare-up of the secondary rash, it does not matter much; but if on the other hand it is, say, in an already diseased coronary artery, it might lead to occlusion and sudden death. From this the importance of a thorough physical examination, and the selection of the drug before starting the treatment becomes apparent.

- (iv) Another defect of the arsenobenzols is what was described by Wile as "Therapeutic paradox". For instance, a patient with syphilitic cirrhosis of the liver without œdema if put on arsenobenzols from the start will improve for a short while, but the rapid healing and fibrosis would block the portal channels resulting in hepatic insufficiency and ascites and virtually kill the patient while curing the disease.

Relative merits of the different arsenobenzols:

- (a) Salvarsan (606) is the original product introduced by Ehrlich and is still considered to be the most powerful member of the group; but the preparation of its solution by neutralisation with alkalis and other technical difficulties in its administration have made the general practitioner abandon its use in favour of the more handy preparations.
- (b) Neosalvarsan (914) was also introduced by Ehrlich. It is less toxic but less efficacious as well, as compared to 606 even for the corresponding arsenical contents, though this inferiority is compensated to some extent by its ready solubility and producing a neutral solution, thereby eliminating the difficulties of salvarsan. It is less liable to give rise to exfoliative dermatitis though more liable to give hæmorrhagic encephalitis and aplastic anæmia. Its solution is however more likely to form toxic products on exposure to air and so must be injected at once. It is generally given by the intravenous route, but it can also be given by deep intramuscular injections, in which case its efficiency is supposed to be as great as that of salvarsan itself; but as this is very painful and liable to form abscess, another set of preparations are used for this purpose.

- (c) The arsenobenzol compounds used for intramuscular injections are myosalvarsan and sulpharsenol; these are closely related to neosalvarsan with proportionately more of sulphur incorporated in the molecule. They are supposed to be less toxic than the preceding ones, though their liability to exfoliative dermatitis is greater than even salvarsan and that for aplastic anæmias much more than 914. The advantage of these is that intramuscular injections are almost painless; another point is that given by this route they are continuously absorbed and remain in the system for a longer period, and are therefore more effective in ultimately curing the disease. They also avoid to a certain extent the explosive Herxheimer reactions. Therefore wherever there is any danger from such reactions, the patient should be carefully prepared by giving bismuth or mercury before giving arsenobenzols and when this is given, at least the first few should be by the intramuscular route.
- (d) Another arsenical compound though not belonging to the arsenobenzol series, is one in which the arsenic is in the pentavalent form. This is known as tryparsamide. It is a compound of low spirochaeticidal value; but its chief use is in the treatment of neurosyphilitic tabes and G. P. I.

Dosage.—Ehrlich pointed out that the tolerance limit for Salvarsan is 1 centigram for every kilo. of body weight. Therefore for the corresponding arsenical contents, the limit of Neosalvarsan would be $1\frac{1}{2}$ cgs. per kilo (2·2 lbs.) In actual practice a dosage of 1 cg. of Neosalvarsan per kilo. is considered to be the therapeutic dose and should not be exceeded; in fact modern opinion is in favour of slightly less. In an ordinary case with no visceral complications it is best to begin with $1/2$ to $2/3$ the therapeutic dose and gradually increase after the first few injections. On the other hand in cases of cardiovascular, or neuro-syphilis prepare the ground with bismuth or mercury and then give the smallest possible dose, and repeat at longer intervals than the customary weekly periods. The dosage for Sulpharsenol and Myosalvarsan are similar to that of Neosalvarsan.

The total quantity to be injected in a course depends upon the general condition of the patient, the stage of the disease at

which the treatment is started and the serologic picture etc. but as a practical point it is considered inadvisable to exceed 2.6 grammes of 606 (or 3.9 grammes of 914) in 57 days for an adult male of average build.

As stated before the toxic manifestations of the Arsenobenzols may be many and varied, but here I shall enumerate only the commonest and the most important of them, so that one may be on the lookout and deal with them at the earliest possible moment. These can be divided into :—

1. Those coming on during or immediately after the injection.
 - (a) Vasomotor disturbances also called Anaphylactoid or Nitritoid crises. These simulate closely the real anaphylactic phenomenon *i.e.*, there is flushing of the face, swelling of the lips and tongue, respiratory distress, and possibly syncope and urticaria. They are due to either a faulty compound, imperfect preparation of the solution, or to too rapid injection. The treatment is to inject 1/2 to 1 c.c. of adrenaline chloride solution.
 - (b) Pain in the gums and a peculiar taste in the mouth, best treated by hydrogen peroxide gargles.
2. Those coming on within a few hours of the injection.
 - (a) Rigor, fever and headache. These require as a rule no treatment, but a dose or two of pyramidon relieves the symptoms and is much appreciated by the patient.
 - (b) Vomiting, diarrhoea, pain in the back and cramps in the leg. Symptomatic treatment is enough.
 - (c) Herpes. For this a smart purge together with iron and bark is helpful. A dusting powder containing chlortone is applied locally.
3. The most important of the toxic manifestations of this group appear at various times from a day or two to a month or more after the injection and are :—
 - (a) Albuminuria, which occasionally develops in patients treated with arsenobenzols, but the albuminuria is of the nephrotic rather than of the nephritic type; the latter is more common in patients treated with the heavy metals, which are irritant to the kidneys, and in this respect mercury is worse than bismuth. Therefore in treating syphilitic patients it is necessary to examine

the urine from time to time. The albuminuria due to arsenobenzols generally disappears completely of itself by stopping the drug in time, but can be hastened by giving alkalies.

- (b) Cutaneous affections occurring during the course of arsenobenzol treatment may be in the form of mild erythema passing off quickly, or may be morbiliform, or scarlatiniform rashes; but the gravest of all is the acute exfoliative dermatitis which may even end fatally. This is more common if more than 4 to 4.2 gms. of the drug (914) are injected in less than 8 weeks. The actual exfoliation and eczema with local pustulation is generally preceded by prodromal signs such as skin irritations and if one is on the look-out for these, gives a smart saline purge and stops the injections timely, the grave complications might possibly be averted. Even when the rash actually comes out one can abort the attack by giving an intramuscular injection of 2.5 c.c. of intramine. When, however, the complication sets in, the patient should at once be put to bed and kept warm. Warm baran baths may be given, and three intravenous injections of sodium thiosulphate in doses of 0.5, 0.75, and 1.0 gms. in 10 c.c. of distilled water be given every alternate days. Another thing is to give 10 c.c. of a 50% solution of glucose intravenously on 3 successive days this is more important when there is reason to suspect affection of the liver; even with the best aid the dermatitis takes several weeks to clear up, and may leave the patient permanently hypersensitive to arsenobenzols.
- (c) Jaundice from the use of arsenobenzols may come on during the course of the treatment or may be delayed even upto several months. Generally it is of a mild type with clay coloured stools and highly coloured urine. Sometimes they are much more serious, with hepatic and epigastric pain, followed by restlessness, delirium, and death. The changes in the liver are like those found in acute yellow atrophy. It is best to discontinue the treatment at least temporarily even for the mild cases, withdraw meat and eggs from the dietary, and as said before give saline purges together

with sodium thiosulphate and glucose. Large doses of soda bicarb and bismuth carb are also helpful.

(d) Cerebral symptoms due to arsenobenzols are not commonly seen in these days, chiefly due to small initial doses and moderate ultimate doses. The manifestations are headache, mental confusion, epileptiform convulsions and coma ending probably in death. Treatment consists in venesection with removal of about a pint of blood, lumbar puncture and injection of adrenaline chloride hypodermically.

(e) Aplastic anaemia is another grave manifestation of arsenobenzol poisoning. It is generally preceded by stomatitis and petechial haemorrhages in the skin. Later on there is severe bleeding from the mouth and other mucous membranes resulting in melena, large purpuric haemorrhages in the skin and severe prostration. There is a rapid fall in the leucocyte count and the haemoglobin value, with a diminution of the red cells and blood platelets.

It is very difficult to arrest the bleeding, though haemostatic sera and calcium salts may be used to increase the coagulability, and blood transfusions resorted to, together with the general detoxicating agents mentioned before. If the catastrophe can be averted large doses of liver extract is given to bring in a reticulo-cyte crisis. Hygiene of the mouth with antiseptic mouth washes is very essential in these cases to prevent cancrum oris.

Before finishing with this group of drugs I wish to point out that a substantial reduction of the toxic complications can be achieved by giving a draught containing 3 to 4 ounces of glucose with some soda bicarb in water about an hour before the injection, and he should have nothing else for two to three hours before and after the injection. He should also be questioned for evidence of renal irritation like polyuria; itchiness of the skin and the colour of the urine. The conjunctiva and the mucous membrane of the mouth examined carefully and the weight taken. Another practical point is never to sterilise the syringe in alcohol.

BISMUTH.

Since its introduction by Levaditi and Sazerac in 1921, Bismuth has attained a very important place in syphilotherapy, and though of only a recent origin, it seems it has come to stay and is rapidly replacing mercury in the treatment of the disease.

The chief reason for this is its high spirochaeticidal properties combined with its power of building up tissue-resistance. Another reason for its popularity is due to its lower toxicity as compared to mercury, in as much as it does not produce anaemia and comparatively much less renal irritation, and for the corresponding doses which can be given with equal safety it goes a longer way in eradicating the disease. Further it has a particularly useful place in the treatment of neuro-syphilis and for the cases in which after a careful examination it was found possible only to check the further progress of the disease. The next, and one of the most useful purposes served by it is in the preparation of the patient for treatment with arsenobenzols, where the use of the latter straight away might do irreparable damage by precipitating Herxheimer reaction. So satisfactory is its action in this respect that it can be given as a guiding principle that whenever in early syphilis the involvement of the nervous system is suspected, and invariably in late syphilis, a course of bismuth should always precede arsenobenzols, except perhaps in cardio-vascular or hepatic cases, where even bismuth can produce therapeutic shock and paradox.

With all the merits enumerated above it is important to remember that for general routine use, it is only an adjunct and not a substitute for the arsenobenzols.

The toxic effects of bismuth are similar to those of mercury and hence one should be on the look-out for them. The first sign of saturation is a blue line at the margin of the gums, especially at the incisor teeth and a metallic taste, later on there is general staining of the buccal mucosa with aphthous stomatitis which proceeds on to a sort of cancrum oris. Although albumin may be found in the urine from its too energetic use, this rapidly disappears if the drug is suspended in time. Certain individuals, however, suffer from colitis in over dosage.

The mode of administration of bismuth for antisyphilitic purposes is limited entirely to intramuscular injections, and the preparations in common use are:—

- (a) *Tri-pol*—This was the original preparation used by Levaditi and Sazerac. It is a tartaro-bismuthate of potassium and sodium suspended in oil containing about 64% of bismuth.
- (b) *Neotrepol*—An oily suspension of precipitated bismuth containing 96% of bismuth.

- (c) *Bicoral*.—A suspension of precipitated bismuth in creocampyl base containing 100%.
- (d) *Bismostab*, Hypofoid bismuth, and Bismuthyl are suspensions of precipitated bismuth in glucose solution isotonic with body fluids containing about 99.97% of the metal.
- (e) *Bisacryl*.—A solution of bismuth oxychloride in chlorotone water with 80% bismuth content.
- (f) *Quinby*.—An oily suspension of quinine iodo-bismuthate containing 24% of the metal.

Dosage.—As a general rule it can be laid down that 5 mg. of the metal per kilo of body weight per week represents the average dose. It is therefore very necessary to know the exact metallic content of the preparation used. The injections can be given at weekly intervals or half the quantity every fourth day. A course of 10 to 15 injections representing about 3 grammes of the metal is tolerated well by the average adult.

MERCURY.

Before the introduction of salvarsan preparations mercury was the sheet-anchor in the treatment of syphilis; since then it has rapidly fallen into disfavour, more so by the advent of bismuth. The chief reasons for its losing the ground is that it has a very low spirochaetocidal value, and is much more slow in action than the other two. Its toxicity leading to dangerous complications in a certain number of cases is another point that weighs heavily against itself. In spite of these disadvantages it has lingered on due to its unique quality of building up tissue-resistance and the fact that it never gives rise to therapeutic shock or paradox. It is therefore very useful in the preliminary preparation of patients with cardio-vascular or neuro-syphilis, for later treatment with more potent remedies, because in these cases even the slightest degree of reaction may prove to be catastrophic. For the cases tolerant to it, and with proper care, the system can be kept saturated with it almost indefinitely and hence it has an important place for use in between the courses of arsenobenzols and bismuth.

Modes of administration.—(1) *Oral*, is probably the most convenient though not the most effective method. The preparations used are Grey powder mixed with Dover's powder, known as Hutchinson's powder. Hydrargyri perchloride prescribed in a

mixture form combined with potassium iodide, and hydrargyri iodide viride given in a pill form. Oral administration usually causes gastro-intestinal disturbance and so a little opium is combined with it as in Hutchinson's powder above. The dose is gradually increased till slight signs of stomatitis develop and then it is reduced. Courses of three weeks are usually prescribed with a week's rest, and it is advisable to ring a change of preparations.

(2) *Inunction*.—This is the most effective though a messy method of administering mercury. Oleate of mercury is the preparation of choice. A dram of 50% ointment is rubbed daily into the hairless parts of the body, the site being changed every day. This is done for 6 days, a bath is given on the 7th, and the process is started again. Stomatitis and dermatitis are commonest by this method. It is, however, very useful for infants and children with congenital syphilis.

(3) *Intramuscular*.—As an adjunct to arsenobenzol it is a useful method though the modern tendency is for bismuth. Both soluble and insoluble preparations are used, of the former Biniodide (1%) in doses of 1 c.c. is common; of the latter Grey oil & Lambkin's cream in doses of 1 grain of mercury per week for an average adult, or Calomel cream 1/2 to 2/3 grain of mercury per week, and mercury salicylate 1½ to 2 grains per week are the common doses.

The advantage of insoluble ones are the slow absorption and excretion, so that enough is retained; the system and the action is continuous.

(4) *Intravenous*.—This is not a favourite method, as the drug is quickly excreted, and defeats the very object for which mercury is used.

The toxic actions of mercury are:—

- (i) Stomatitis, gingivitis, looseness of the teeth, salivation, and a bad odour from the mouth. It can be prevented to a large extent by careful attention to oral hygiene. While taking the drug the teeth should be brushed twice daily and gargles of potassium chlorate taken before retiring. Before, however, starting the course the teeth should be put in order by scraping and filling if necessary.
- (ii) Nephritis rarely develops from therapeutic doses if the kidneys are healthy, but the matter is quite different in

those with already diseased kidneys, and for them it should never be used. The urine should be regularly examined and the drug stopped on the first signs of renal irritation.

- (iii) Colitis is not common but may be encountered with.
- (iv) Anæmia, general malaise, and loss of weight are the results of uninterrupted long courses with heavy doses; but fortunately by the introduction of the arsenobenzols such courses are not needed and are less frequently seen. It is, however, advisable to keep a close watch on the patient's general condition and stop the drug timely.
- (v) Dermatitis is mostly due to the local irritant action when used as inunction; it is decidedly commoner with the arsenobenzols, and where there is reason to suspect that the skin is susceptible, it should be stopped while he is having the latter.

IODINE.

Iodine and its preparations are the only other remedies that are commonly used in the treatment of syphilis. Though it has no specific action on the disease itself, it has been used from the earliest times. These act by promoting the lysis of the syphilitic granuloma (gumma), and the prevention or resolution of fibrosis in which the spirochaetes hide themselves, and thus expose them to the action of the spirachæticidal remedies. They are, therefore, most useful for the later stages; but there are reasons for supposing that there is some amount of tissue infiltration from the very beginning and so they should be used in all the stages.

The preparations commonly used are the iodides of potassium and sodium and probably they are the most effective as well; but for those who cannot tolerate these, certain organic iodine compounds like Iodallin, or pure iodine dissolved in poppy seed oil sold under the trade name of Lipiodol are prescribed. In most cases it is given by the mouth but sometimes intravenous route is also resorted to and for this only sodium iodide is used.

Dosage. There is a good deal of difference of opinion as regards the doses, some use as much as 100 grs. three times a day, while others only a few grains. The commonest and to my mind quite a good dose is 10 to 20 grs. three times a day. For intravenous use 20 grs. of sodium iodide in 20 c.c. of distilled water is

injected daily for a week or so but intravenous medication should always be preceded by oral route for a couple of days at least.

Intolerance.—A certain amount of discomfort is generally felt by the patient in the beginning. These are frontal headache, depression of spirits, coryza, watering from the eyes and sometimes a bad taste in the mouth. These pass off in a day or two when the system is saturated with iodine, but in certain cases there is a real intolerance to the drug giving severe headache, breathing difficulty and erythematous rashes on the skin. For these the organic preparations are helpful.

To avoid the undesirable effects it is best to prescribe it combined with soda bicarb, spirit ammonia aromatic and tincture of nuxvomica. The dose should be taken well diluted with water and if need be, the patient should be asked to mix the required quantity of water with the medicine just before taking it, so that not more than 5 grs. are taken in an ounce. If this is not tolerated it should be given diluted with hot milk and then probably it will not cause iodism. It is not desirable to take it on empty stomach, neither just after a meal, as then it will be retained in the stomach for a long time and will be acted upon by HCl of the gastric juice liberating hydroiodic acid which is irritant. The best time to take it is an hour and a half after the meals. Personally I prefer to give the daily amount in one large dose in hot milk just before the patient retires to bed. If signs of iodism develop it is best to double the dose of the drug and the alkalies, as iodism is less common with larger than smaller doses. Prescribe a mouth wash containing potassium chlorate and sodium chloride, and if need be give a saline purge.

Having described the behaviour of the different antisypilitic remedies in some detail, I shall close this article with a summary of the principles to be adopted in the treatment of the disease.

1. Never use an arsenobenzol except in conjunction with or preferably preceded and followed by a course of one of the heavy metals.
2. Never use an arsenobenzol insufficiently. Either give a long course or several short courses with iodides and a heavy metal in between the courses. A single short course has none of the advantages but all the disadvantages of this group of drugs.
3. Never use an arsenobenzol when there is possibility of a therapeutic shock or paradox without preparing the way with a heavy metal, and even then start with very small doses intramuscularly.

UNTOWARD EFFECTS & POISONING FOLLOWING INJECTIONS OF ARSENOBENZOL IN SYPHILIS

BY

J. N. GHOSAL, L.M.S., *Buxirhat*.

ERLICH'S epoch-making discovery, 606 & 914, SALVARSAN and NEOSALVARSAN, has certainly been the greatest boon to the Syphilitics and this is evident from its widespread use even in the remotest of villages by all "Paths" and all Quacks. Although Salvarsan has not been able "to wipe syphilis off the map", it must be admitted that spectacular effect is really miraculous and that intelligent use of the drug, combined with Mercury, Bismuth or Iodide, almost radically cures the disease, prevents after-effects and removes all stigmas from the body of syphilitic offsprings.

In course of practice, we have, however, learnt that this powerful beneficial agent should be used with caution, after proper diagnosis, with careful doses, and that in spite of every precaution this drug sometimes causes moderate and even severe, recent as also various late, disturbances. These are enumerated below.

[*Note*:—The writer has injected hundreds of cases and many hundreds of injections have been given in his clinic under his supervision but he cannot remember a single death following such injections which can be unhesitatingly attributed to the drug itself. Severe poisoning symptoms have been rare too; but mild arsenical reactions, both recent and late have occurred, detected promptly and successfully treated. Such is also the tale of other recognized clinics of this area. The writer asserts that all the horrible sights and deaths met by him following salvarsan injections have been cases treated by quacks and compounders without previous diagnosis and proper instructions. The victim whispers his folly to his quack friend and then follows a series of stealthy injections,—any number and to the highest strength, till either the patient is cured or poisoning sets in. A simple soft sore, a pimple on the "hidden" area or even a visit to a questionable house is followed by a series of injections! The writer remembers 3 cases of Granuloma Inguinale and innumerable cases of soft chancre, itches, pruritis, ulcer molle, etc., that had received various injections. One wonders why more cases of poisoning are not met with.

Misuse of Quinine, Emetine and Arsenobillon,—the 3 oft-injected drugs in Bengal,—by the lay practitioners is on the increase. Registered practitioners are nowadays called, not to diagnose or treat malaria or liver or syphilis, but to treat the failures of drugs or the resulting untoward symptoms following misuse of these wonderful curative agents. For in these days of wide competitive advertisements, even the lay public knows that fever requires quinine; liver and dysentery, emetine; syphilis, salvarsan; headache, cafiaspirin etc.

Lastly, the writer had heard of 2 deaths following injections of discoloured and sticky Neosalvarsan preparations.]

In Recent Syphilis, injection of arsenobillon in adequate dose is always followed by a *Febrile Reaction*. This is as constant as in antimony injection in kala-azar cases, and, absence of such a reaction in the first injection in both cases throws a sensible doubt as regards the diagnosis. Infrequently the reaction is very heavy and lasts more than 24 hours. Rarely, *Anaphylactic Phenomena* manifest immediately after the injection and these consist of vaso-motor disturbances with congestive crises, erythema, vomiting, tremor, fits, etc. In about one per cent. cases, *Shock* of a profound character is confronted with. The latter two phenomena,—anaphylaxis and shock,—are very often repeated if the injections are continued without proper precaution. In some rare patients, every injection is followed by nausea, vomiting, faintness, conjunctival hyperæmia, flushed face and accelerated pulse and respiration. Ordinarily, the febrile reaction gets less and less during the subsequent injections. But in a certain number of cases, toxic hepatitis, erythemas, nephritis, etc., supervene quickly. And very rarely, convulsive seizures with meningeal troubles set in before death.

Idiosyncrasy and Susceptibility:—Extreme susceptibility to Arsenic injection is seen in some individuals and case-records of sudden death following salvarsan salts are found in literature. The writer has heard of one case from a colleague where death took place on the table after the very first injection of only 0.15 grm. of neosalvarsan. Cases of shock with stoppage of heart beats, and all the signs of collapse have occurred in 3 or 4 cases of the writer, but fortunately all the cases recovered. Intravenous injections of preparations of salvarsan have been followed by *abortion* in pregnant women—(possibly abortion would have taken place even without injection, but as it took place within 1 or 2 days after the injection, we suspect the drug as the culprit and

exonerate the disease), *joint pains* resembling acute rheumatism in a middle-aged person (and this recurred on the second as well as on the third intravenous injection, so that the drug had to be replaced by myosalvarsan after which the pains subsided), heavy *neuralgic pains* and *paretic symptoms*, *hermatemeses* and *hematuria* etc.

The following signs of intolerance of the drug are to be taken as warning and should not be neglected because they are slight: malaise or pains, slight even transient rashes, stomatitis and itching of the skin, after every injection.

PROPHYLAXIS AND TREATMENT.

A. For shock and Anaphylaxis:—

Many of the above conditions can be avoided with care and most of the reactionary signs are amenable to proper treatment. The writer follows the undermentioned routine in his clinic:—

- (a) A proper diagnosis is attempted and full history obtained in every case before proceeding with the injection. (Mere suspicion on the part of the patient is never accepted as sufficient ground for procedure.)
- (b) The ampule is inspected for cracks and drug examined for purity, syringe is finally washed with boiled distilled water thoroughly, and the patient placed in the recumbent position.
- (c) The drug is dissolved in the requisite amount of redistilled water and equal quantity of blood is drawn into the syringe: ordinarily, after half a minute's pause the whole content is slowly injected: but in suspicious or nervous cases, the end of the needle is pressed by the assistant, the syringe is taken off, the blood is thoroughly mixed with the injecting fluid, and then the syringe is again put in and injection effected. (The writer adopted this method from 1925, after encountering a severe case of shock necessitating an intracardiac Adrenalin injection,—and has not encountered a single case of shock since.)

Adrenalin.—The writer administers 5 to 10 drops of Adrenalin chloride solution on the tongue of every patient before an intravenous injection is given in his clinic. He watches the patient during the process of injection for any such signs as, sudden redness of the face or of the eyes, an alarming suffused look, sudden restless motion, accelerated pulse or respiration, nausea,

etc., the onset of which is immediately treated with intramuscular injection (pectoral) of adrenalin sol. And any sign of collapse,—cold blue skin, stoppage of heart beats—is treated with intracardiac adrenalin injection. (It is sheer loss of valuable time on the face of stoppage of circulation to throw in adrenalin or cardiazol into a vein or a muscle. Immediate cardiac injection is a safe as well as sure procedure. Even if the needle gets only into the cardiac muscle, and no blood appears within the syringe, and the adrenalin solution is thrown into the muscle, prompt and satisfactory action follows.)

Hot Bath.—Dr. Wirz strongly recommends putting the patient into a bath in cases of severe shock following salvarsan injection. It is only possible in a hospital.

Massage of the Heart.—The writer was once rewarded with success in a case of extreme shock and collapse in a thin boy of 14 after intravenous antimony injection, where the heart had kept perfectly still for 20 to 25 minutes, by rhythmic inward and upward strokes within the costal arch against the apex of the heart. But he prefers the intracardiac injection.

B. For Idiosyncrasy and Susceptibility:—

1. Preliminary injections of the drug in minutest doses have been tried to produce immunization.

2. Atropine, saline solution and sodium carbonate, calcium lactate etc., have been used in many cases; combined 1 and 2 is more effective.

3. The drug had been dissolved in 50% glucose solution and injected, with toleration; (it is claimed to prevent flocculation of the blood.)

4. The writer claims that the method of diluting the injecting fluid with equal or more quantity of the patient's own blood and re-injecting the whole contents of the syringe is the best method of desensitization. And if the patient is given a few drops of adrenalin sol. on the tongue before such an injection, sufficient precaution will be taken.

Late Effects.—(The writer is presenting here the latest opinion about the normal and abnormal action of salvarsan salts:—

Physiological Action.—Injection of these salts in a syphilitic patient usually causes an increase of urobilin content of the stool, the urobilin content of the urine, and the number of reticulocytes. These changes, especially the reticulocytosis, are expressions of increased hæmolysis and regeneration of the blood. The spirochæta pallida usually disappears from superficial lesions after 2 days in

96% of cases when treated with 0.6 gm. injections of neo-salvarsan.

Pathological Action in Certain Cases: "Arsenobenzol compounds damage vascular endothelium, the most serious effect being thrombosis of capillaries, with small extravasations of blood, as is seen in the condition known as encephalitis hæmorrhagica, and in hæmorrhagic nephritis, from which the patient may die in coma within a few days of the injection. Petechie are often seen in the skin in severe cases of dermatitis, and in fatal cases, subcutaneous echymoses are found throughout the gastro-intestinal tract. The resistance presented by the vessels of different patients to the action of the arsenobenzol compounds evidently varies very widely."

The following untoward effects and poisoning symptoms occasionally occur after a series of arsenobenzol injections and sometimes fatal results are encountered with:

1. *Cerebral reactions* of hæmorrhagic type with widespread capillary hæmorrhage, resulting in fits and coma; apoplectic and epileptiform seizures are also seen.

2. *Visceral symptoms* such as, toxic hepatitis with jaundice, rarely signs of acute yellow atrophy; nephritis and albuminuria, irritation of the respiratory tract followed by broncho-pneumonia, aplastic anaemia; gastrointestinal irritation with nausea, vomiting, hæmetamesis, melena, etc. have been met with.

3. *Skin Eruptions* of various kinds are commonly met with. Transient rashes and erythema are quite common; so are urticaria and itching eruptions. Exfoliative dermatitis is also occasionally met with. The writer noticed the following horrible symptoms and sights in 4 patients who had been injected by quacks:—

- (a) Sarkar, aged 37. Had taken a course of neo-salvarsan, 4 injections previously, a few months before the second course. This time he noticed dermatitis after the first injection of 0.6 gm. This was taken to be tertiary manifestation and 0.9 gm. was injected. The result was hæmorrhages from all the orifices, intense conjunctival echymoses, petechial and purpuric patches all over the body besides the dermatitis and stomatitis. The writer saw him in this condition, smelling horribly, passing deep yellow urine. No vein could be detected on account of the skin lesions and sodi thiosulphate

was given intramuscularly. Altogether 6 injections had been given but he did not show any improvement. The tissues gave way in different places and he died in exhaustion two months after the last injection.

- (b) A prostitute was evidently very susceptible to arsenic, and after the first injection of 0.15 gm. manifested erythema and stomatitis. But these were taken to be syphilitic eruptions and further course of 0.30, and 0.45 and 0.6 gm. was given every week. The writer saw her in an extremely œdematous condition with hæmorrhagic purpura-like patches all over. She complained of intense burning sensation and died from suffocation following extreme congestion of the lungs.

- (c) A young boy of 18 contracted from a friend extensive weeping eczematoid eruption all over the body. Although the boy could not be accused of venereal connection, the father was cross-examined and admitted both G. and S. Immediately a course of neo-salvarsan was commenced and as the skin lesion became superimposed with petechial rashes, a course of mercury injections were added to the above. The result was intense stomatitis, salivation, diarrhoea and ultimately dysenteric stools. This boy recovered wonderfully with 3 intravenous injections of sodi thiosulphate and acriflavine compresses.

His fourth case was a middle aged man who had been given 3 arsenobillon injections. The writer saw him on the last day and he looked like a dying small pox patient. There were innumerable necrosed areas from which horribly smelling pus and gangrenous oozing were taking place. He could not be recognized and died of exhaustion. It was during the war days.

(Donovan reported similar cases which he designated as follows:—Melanoderma; melanoderma with follicular hyperkeratosis; multiple subcutaneous abscesses associated with exfoliative dermatitis; cutaneous and subcutaneous necroses with arsenical exfoliative dermatitis.)

4. The following **signs of Intolerance of the drug** should be remembered and searched for in the course of injections:—

Conjunctival hyperemia, jaundice, burning and itching sensations, redraw tongue, nausea, vomiting and restlessness.

TREATMENT.

1. Watch every case for signs of intolerance and stop treatment at the first warning.
2. Combined injections of sodi thiosulphate and neosalvarsan have been recommended.
3. "Many syphilographers deem the administration of a mercurial, conjointly with an organic arsenical preparation, as an extra hazardous procedure."
4. Sodi thiosulphate, adrenalin solution and sugar solution are the recognized treatment when poisoning has set in. Calcium often fails.
5. Arsenobenzene *Jaundice*:—
 - (a) Craven has shown the great importance of diet in the prevention of arsenobenzene jaundice, and that we have been wrong in restricting fats and advising plenty of carbohydrates. He recommends a high fat-content of the diet during injections and the time for giving injection to be 2 hours after a good meal, because starvation is a very important predisposer to liver damage by arsenobenzene compounds.
 - (b) Savulesco shows that the solution of 914 in the chologogue dehydrocholate of soda, 5 c.c. of a 20% sol. prevents toxic effects. "But when a patient treated first with 914 dissolved in water shows urobilinogen in his urine, continuance of the treatment with the 914 dissolved in dehydrocholate of soda does not prevent the development of jaundice."
 - (c) Big doses of sodi bicarb, contraindine injections and sodi glycocholate are recommended for treatment of the jaundice.
6. Arsenobenzol *Purpura*:—calcium and liver therapy, so loudly recommended in acute cases, have not proved their worth in chronic cases. Intravenous adrenalin sol., and blood transfusion are recommended. The writer had been unable to check the progress of the disease in his two cases mentioned above.
7. The skin eruptions also defy all treatment unless these are detected very early and the offending drug stopped at once. Alternative injections of mercury and arsenic enhance the risk in susceptible persons. Sodi Thiosulphate is a sure antidote no doubt, but it should be given as early as possible. Acriflavine

bath, diuretin and mineral water and an ointment consisting of bismuth, acriflavine and paraffin liquid may be tried.

Late Effects and Fatalities:—The relation of late effects of syphilis with those of arsenobenzene injections has been a disputed matter. Some assert that the arsenic injections rapidly eliminate the external lesions but favour development of late ones, such as parenchymatous neurosyphilis, cardiovascular syphilis, etc. But this assertion has been proved to be fallacious. In a place where the population is largely untreated, the number of neuro-cardio-vascular syphilis encountered with was more than those found in treated areas.

Reawakening of Latent Diseases:—It is interesting to note that some authorities believe (with the great Homeopath, the Hahnemann) that "many effects attributed to arsenicals are really due to awakened latent infections, such as measles, rubella lichen planus or the infectious erythemas." That it rouses latent malaria in many cases as well as cures both syphilis and malaria (at least for the time being) is frequently experienced.

Local Injury following faulty technique in injection is not uncommonly met with in subdivisions. In the days of salvarsan injections, extensive sloughings of the gluteals, exposure of the sciatic nerve and its damage had been met with on many occasions. Intravenous injections have resulted also in sloughings of the elbow-tissues and damage to the median and ulnar nerves. Every one knows the fate of the doctor and the patient when an unfortunate leaking takes place, especially in a fat body, the sleepless nights, the futility of all applications, the cursings and annoyings! But the worst cases are those where the injector persisted in throwing the whole content into the soft tissues, in spite of warnings in the shape of swelling, painful facies of the patient, or radiating pain into the fingers or shoulder joint.

Duration of Intolerance and its Detection:—After recovery from dermatitis or any other poisoning signs following an injection of arsenobenzol, the problem arises about further injections. Stuart and Maynard suggested that "intradermal injection of sufficient 1-1000 solution of 606 or 914 to produce a wheal 3 to 4 mm. in diameter might be a means of detecting a persistent intolerance. In 2 out of 3 cases there appeared 6 to 18 hours after the intradermal injection an elevated indurated nodule about the size of a dime, dark red, itching intensely, and surrounded by an outer zone 3 in. in diameter, composed of papules. The redness increased for about 48 hours, persisted for 11 days and then subsided. In controls,

there was no greater reaction than a fleeting erythema and a minute papule or macule persisting for 2 or 3 days."

Combined treatment of thiosulphate and arsenic is recommended with adrenalin.

Conclusion:—Millions of injections have been given, the salts of arsenobenzol have already established their claim for recognition as a specific for syphilis, the number of arsenical poisoning is too insignificant to retard the use of the specific, but in the hands of the quacks it has certainly proved a dangerous weapon, the early signs of intolerance of the drug should be well-known to the doctors, and persistence of injections even after poisoning symptoms have already manifested, means death in most cases in spite of treatment.

GONORRHOEA IN WOMEN

BY

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GONORRHOEA has been known to early Japanese, Jews, Romans and Greeks. It dates back to about B. C. 1471. Gonorrhœa in women with its intraperitoneal complications was little known to the early writers. Its infectious and contagious nature was recognised at the end of the fourteenth century, which led to enactment of laws for compulsory medical supervision of brothels. Syphilis and gonorrhœa were considered to be of the same nature and this notion was supported by the unfortunate experiment of John Hunter in 1767 A.D. Philippe Ricord definitely established the identity of gonorrhœa by inoculating gonorrhœal pus in 667 cases.

In 1879 Neisser described the causative organism and its method of division and gave them the name of gonococci. In 1872 Emil Neoggerath was the first to draw attention to gonorrhœa in women. Before this gonorrhœa in the female was regarded as vaginitis. In 1885 gonococcus was first grown on artificial medium by Bunn. In 1886 Roux of Paris published the method by which gonococcus can be made out by Gram method of staining.

Gonococcus was usually found in pairs though they may be met with in tetrads. They are intracellular i.e., they are found in the pus cells. They are kidney shaped with their concavity facing each

other. They are Gram negative. The best medium to grow them is agar covered with a thin film of sterile human blood. There are two other Gram negative cocci viz. meningococcus and the micrococcus catarrhalis. If one meets with Gram negative diplococci which are intracellular in the urethral discharge, they are surely gonococci.

Gonorrhœa in women is a curable disease if proper treatment is given as early as possible. It is unfortunate that this subject does not receive the same careful study on the part of the students and also the teacher. Very few candidates, who pass the final examination, receive adequate training in the treatment of gonorrhœa in women. The average general practitioner has a vague idea about the treatment of this disease. Unless the treatment is energetically and methodically given the results are bound to be unsatisfactory to the doctor and disastrous to the patient. It would be a welcome step if the attendance at the venereal clinic is made compulsory for the candidates before they are allowed to appear for the examination. Of course the man at the head of the department must be one who is well equipped with the knowledge of the up-to-date treatment of this disease.

In women the genital canal has direct communication with the general peritoneal cavity. If the disease is not treated in time it makes its way upward to the peritoneal cavity. Nature has equipped every one with power to check and fight the disease and prevents its onward rush. But we cannot expect too much from nature. The patient must also co-operate with nature. It is during the menstrual course, or after abortion or labour that gonococci get easy access to the upper generative tract. Absolute rest during menses and adequate treatment during pregnancy will save so many from the inevitable fate of sterility and chronic invalidism.

Whenever a case comes up with a complaint of discharge and painful micturition, one should not give a diagnosis without a thorough and systematic examination. Microscopic examination of film of discharge taken from the urethra and the cervix only may reveal the real nature of the trouble. Films of vaginal discharge will not give any clue and the trouble 'taken to get the film is worse than useless. It is dangerous to give one's opinion on venereal infection without a bacteriological report as cases of urethritis and vaginitis may come up without any venereal origin. Junior practitioners should remember that hasty and wrong diagnosis may lead to domestic trouble of the first magnitude. I would like to cite one case of this nature.

Case. Mrs. P. age 17, married 6 months complained of painful micturition and profuse vaginal discharge. She went to a lady doctor, who straight off diagnosed the case as gonorrhoea; and expressed her opinion to a talkative old nurse who had accompanied the patient. This nurse spread this rumour to most of the males of the family. The husband, a graduate, a man of upright character, got wild on hearing this. He was accused by the parents of the girls of having infected the wife. The affair assumed a very grave appearance. He decided to drag the lady doctor and the nurse to court. Fortunately he came to me before taking this step. I diagnosed the case as non-gonococcal after microscopic examination and the patient was soon relieved of her complaint. The urethritis and vaginitis was a result of menstrual flow starting during coitus. There are many cases on record of such nature.

Examination of the patient in a systematic way is essential to a correct diagnosis and treatment. It must be remembered that cases do not come labelled up with the diagnosis. Haphazard investigation of a case very often leads to failures. This article is chiefly meant for junior practitioners and it is my object to impress upon the young reader to cultivate the habit of systematic and thorough investigation of a case, that comes up for vaginal discharge and painful micturition.

Case taking. Patients may be asked about her complaint, duration, and colour of the discharge. She should be asked if she could give any particular time of infection. Her menstrual history—whether painful, profuse, irregular, should be gone into. History of previous labours, abortion or miscarriages if any should be elucidated from the patients. Presence of joint pains, rash may be noted. Here it may be mentioned that there is no difficulty in getting the full history from the patient provided the doctor knows how to get it. One must inspire confidence in the patient, then one may be surprised to see them giving the information without any hesitation.

The patient should be placed in lithotomy position on a table facing the light. The abdomen should be palpated for any presence of tenderness or swelling in the pelvic region. Presence of enlarged inguinal glands or buboes may be noted. Simple gonococcal infection does not cause any enlargement of glands or buboes.

Doctor should wear gloves and goggles to protect the eyes.

1. First vulva should be examined. The colour, smell of the discharge may be noted. Presence of inflammation, swelling, ulcer,

condyloma should be looked for. The labia should be separated and the condition of hymen whether torn or otherwise noted. Then the opening of the Bartholin's ducts which are at the level of the junction of lower and middle third of the labia minora on the inner side. They may be found to be with red spots 'macule of sauger,' which are very often considered to be *Gonococcal* in nature but may not be so. These when once seen will never be forgotten. Any discharge coming from these ducts should be taken on a slide for examination. Then the condition of the Bartholin's glands should be looked for. They may be inflamed, enlarged due to cystic or abscess formation. They are to be found on the lower end of the *Labia majora*. Massage of these glands if not acutely inflamed will cause secretion of these glands which may be taken for examination.

The urethra may then be examined. It may be inflamed, swollen. There may be prolapse of the mucous membrane. Purulent discharge may be welling out of the meatus. The paraurethral follicles may be seen to contain pus. The skene tubules may sometimes be seen as red spots on the floor of the urethra. This discharge from the urethra should be taken on a slide for making films. If there is no discharge coming out from the urethra it may be milked out by massaging the urethra along the anterior vaginal wall from behind forwards. The Platinum loop may be passed inside the urethra and the discharge coming along with it may be transferred to a slide or tube for cultural examination.

After this the condition of the cervix should be ascertained. For this a speculum Sims' or Ferguson or better still a bivalve one, should be introduced and the cervix exposed. The cervix should be cleaned dry with a cotton swab. The cervical canal should be freed from the discharge with cotton wool on Playfairs probe. The colour of the vaginal portion of the cervix should be noted. Presence of ulcer, erosion, swelling of the cervix should be carefully noted. The discharge from the cervical canal should be taken on a slide with the help of a platinum loop. The condition of the vaginal walls should be noted when withdrawing the speculum. It is useless to try to find out *Gonococci* in the vaginal discharges as they soon disappear from the vagina.

Lastly Bimanual examination is done to ascertain the condition of the uterus, its size, mobility tenderness etc. and the presence of any tenderness or thickening of its adnexa.

I have purposely given the detailed examination as this article is specially meant for the junior practitioner.

Vulvitis. Vulvitis is more often due to Gonococcal infection. It may also be due to causes other than Gonorrhoea e.g. dirty habits, scratching, chemicals, constitutional causes etc.

Signs and Symptoms. Patient complains of heat, burning and pain. Itching of the parts and excessive discharge. The Labia are swollen and tender bathed with purulent discharge. There may be Gonorrhoeal warts present due to the irritating discharge. The inner surfaces of the thighs and the perineum may show signs of dermatitis.

Diagnosis. It is useless to try to find Gonococci in this discharge. Urethral and cervical discharge should be taken to confirm the diagnosis.

Treatment. The parts are cleaned with pot permanganas lotion 1-4000; urethral, vaginal douche of the same lotion is given and the parts are covered with lint soaked in Calamine lotion.

R Calamine Ppt.	...	Gr. xx.
Zinc Oxide	...	Gr. xx.
Aqua Calcis	...	3 iv
Ol. Olivae	...	3 i

The main seats of infection e.g. the urethra, Bartholin's glands and the Cervix must be treated simultaneously to get satisfactory result.

Bartholin's Glands. The ducts of these glands open on the inner side of Labia minora at the junction of the middle and lower third. The glands are situated in the lower end of the labia majora imbedded in tissue richly supplied with blood. Gonorrhoeal infection may cause inflammation of the duct with cystic formation or it may cause inflammation of the glands themselves with abscess formation. In case of inflammation of the duct, the opening of the duct has a peculiar appearance which once seen will not be forgotten. It is a yellow spot surrounded by red circle. It is known as 'macule of sanger' and very often considered to be pathognomonic of Gonorrhoea. I would like to warn my young reader against jumping at the conclusion and pronouncing every case as Gonorrhoeal in the presence of ductitis or Bartholinitis. I have had several cases of non-gonorrhoeal origin. Very often the tear of the hymen at the first nuptial causes mild infection of the nonspecific type. It is absolutely necessary to examine the discharge from the duct and urethra as well as cervix to confirm the diagnosis. In case of ductitis the pus may be seen coming out of the opening. This should be taken on a slide. If no

pus is seen at the opening, the glands should be massaged and secretion taken on the slide.

In the case of the infection of the gland, the gland is swollen and tender, or it may be of a cystic nature. Patient may not be able to walk or sit without discomfort, fever upto 103 and 104 may be met with. Patient is very ill in some cases.

Treatment. In case of inflammation of the duct, it should be washed out with blunt needle mounted in a 2 c.c. syringe. 2 c.c. Acriflavin should be injected into the duct. The gland should be massaged and the secretion squeezed out. In case the gland be infected, it should be removed before the abscess formation. If abscess forms, it should be opened up and the cavity packed with gauze. If as sometimes happens the infection recurred, the gland tissue should be resected. Treatment of the Urethra and Cervix must be carried out.

Urethritis. In the acute condition meatus is swollen and oedematous. Pus is seen welling out. There may be prolapse of the mucous membrane. It runs a self limited course and then it gradually subsides into chronic condition when the patient may not have any complaint. Such cases are potential infection carriers. An inexperienced doctor may take a vaginal smear and declare the patient to be gonorrhoea free.

Patient complains of pain during micturition. Pain starts with act of micturition and lasts throughout the act. This is in contrast with cystitis when the pain is at the end of the act.

Gonorrhoeal cystitis is a rare condition. I have not seen any. Examination of urine passed in three separate glasses may be helpful to exclude cystitis. In the chronic stage the only complaint may be of slight itching. Pus may or may not be present. But one can get discharge from the urethra by milking it with a finger in the vagina from behind forwards.

Treatment. Local treatment should be started in all but very acute cases with very severe pain. The urethra is washed out with pot permanganate Sol. 1 in 4000 in the beginning, then 1 in 2000. Then the bladder is washed out and a little of the solution is left in the bladder, which is passed by the patient by micturition. The vagina is also douched with the same solution. This should be done daily. The patient may be taught to do this washing herself if she cannot attend the clinic daily. She should come to the doctor at least thrice a week. An alkaline mixture with sandalwood oil is prescribed. In some cases I had to use Trimin A. F. D. to get the desired result. Neotropine Tablet

(Schering) one three times a day for five days with an interval of 3 days is given with very good result. I have had very satisfactory results by the use of this preparation. This treatment is quite efficient in the majority of cases. If the case tends to get chronic in spite of the treatment, Silver Nitrate sol. 1 to 10 per cent may be applied to the Urethra with a cotton wool covered probe. This is done about twice a week. Vaccine treatment is rarely needed. I have used Bengal Immunity Detoxicated Gonorrhoeal Vaccine in some cases with gratifying results. The local treatment for the cervix is carried out as indicated in cervicitis for all cases of urethritis.

Patient is told to take bland and nourishing diet. Patient need not starve. Rice, Dal, Chapattis and vegetables may be allowed. Fish and meat are not contraindicated. Let the patient have her usual diet except the spices to keep up her health and necessary power. No alcohol or tobacco should be allowed. Complete rest during menstrual period is essential. Otherwise the disease gets access to the inner part of the cervical canal with disastrous results. Sexual intercourse and any kind of excitement should be strictly forbidden till the patient is completely cured as ascertained by three successive negative examination of the slides of urethral and cervical smears.

In some cases of persistent infection diathermy has been useful. This needs technical skill and should not be lightly undertaken by inexperienced practitioners.

Vaginitis.—This is not seen in adults. In pregnant women we do see granular form of gonorrhoeal vaginitis. In non-gravid cases the infection soon dies out owing to the peculiar nature of vaginal mucous membrane without any glandular crypts and also due to the presence of acid secretion.

Signs and Symptoms.—Excessive purulent discharge, heat and discomfort. There is pain inside the vagina. This type of vaginitis may be met with in women, who have just finished their period. It is at this time that women are liable to get exacerbation of the symptoms. It is at this time that the disease gets access to uterine cavity and tubes, if the patient does not take complete rest. How and why it is so cannot be very satisfactorily explained but experience tells us so.

I remember a number of cases, which have come to me during or soon after the period complaining of acute symptoms. These people were free from any discomfort previously inspite of the fact that the husbands gave history of chronic Gonorrhoea.

In some cases the pus in the acute stage is greenish yellow and very acrid, so much so that the skin of the surrounding part gets excoriated. In neglected dirty cases this acrid discharge leads to formation of condyloma or warts. For diagnosis I would again warn not to look for Gonococci in the vaginal discharge but that from the urethra and the cervix.

Treatment. Hot hipbath in a tub of warm water to which potassium permanganate or listerine or S. T. 37 has been added. Irrigation of urethra and vagina with pot permanganate lotion, 1 in 4000 to 2000 must be carried out. Treatment for the cervix must not be omitted as the Gonococci keep lurking in the cervical canal if the cervix does not receive the attention of the doctor.

Cervicitis. The cervix very rarely escapes being infected. In multiparous women owing to the easy access, the urethra may remain uninfected but the cervix is the chief to receive the brunt of the shellfire (Gonococci). Owing to the peculiar arrangement of the cervical mucus membrane with its glands the germs get a very comfortable place for hiding and thriving. They may remain unobserved till an opportune time comes *e.g.*, menstruation, abortion or labour when they assume their virulent form and they attack the patient mercilessly rendering her a permanent invalid and sterile woman. Cervical gonorrhoea must be treated during pregnancy if the patient is to be saved from gonorrhoeal infection of the uterus and tubes with the curse of the permanent sterility and domestic unhappiness. So called one child sterility will be a thing of the past if adequate treatment is given to women during pregnancy. When pregnant, a woman comes up for purulent discharge, she should be thoroughly examined to find out the presence of Gonococcal infection. It is criminal to omit to examine the discharge for Gonococci. Treat the patient during pregnancy because this is the right time to treat and save the patient from further misery. This will also go a long way in removing the chief cause of the blindness in the world.

Signs and symptoms.—The patient comes up for excessive discharge which may be irritating the vulva and the surrounding parts; backache and slight fever are also present. In the acute condition, the cervix looks red and inflamed with pus coming out of the os. The mucus membrane of the vaginal portion of cervix has lost its pale pink colour and presents the appearance of red circular patch surrounding the os. The cervix may be swollen and oedematous. The acute condition subsides and becomes chronic. In the chronic condition one sees the picture of erosion. The erosion is not an

ulceration but the replacement of squamous epithelium by columnar one. It has to be distinguished from cancer of the cervix, chancre of the cervix and tubercular ulceration of the cervix.

Treatment. Treatment must be begun at once. Complete rest is essential especially during the menstrual period as it is at this time that the germs get access to the upper part of the genital tract. If the patient be pregnant, she must be cured before the labour sets in.

The cervix should be exposed with a suitable speculum; bivalve speculum is preferable. The mucus should be removed with cotton on Playfair's probe. If the discharge is sticky liquor potash in 1 in 5 should be applied to remove it. It is better to take a film of the cervical discharge for diagnostic purposes. Acriflavin 2% should be applied to cervix and its canal with the help of Playfair's probe. 2 Drachms of the flavin solution should be poured into the vagina so that cervix will be bathed with the solution. Cotton wool plug soaked in the solution is inserted into the vagina to be removed the next day by the patient. Patient takes saline douche next morning, one drachm to a pint, followed by pot-permanganate douche. This should be done daily if possible if not at least every alternate day. Urethral irrigation is to be carried out daily. Neotropin by mouth is given three times a day. Cure is obtained in 2 to 3 weeks time if the treatment is carried out efficiently.

If the infection becomes chronic and does not yield to the above treatment, silver nitrate application in the strength of 5 to 10 P. C. has given gratifying results. Iodised phenol also has been used with equally gratifying results. These applications are done twice a week. Diathermy has been successfully used in some obstinate cases.

Endometritis. Gonococcal endometritis is not so common as we think. It is seldom found independent of the tubal infection. Nature has arranged to keep infection from the cervix going up to the uterine cavity. Compared with the number of Gonococcal cervicitis, the number of endometritis are few. There is an effective barrier at the internal os. This barrier is only broken through when labour or abortion takes place. Infection when acute may spread up during menstruation, if the patient moves about during the period. Endometrium is always undergoing cyclical changes and it is cast off every month at the menstrual period. When studying the scraping from the uterus these cyclical changes must be borne in mind. Before these changes were known most of the cases were labelled as endometritis though in fact

there were normal menstrual changes in the endometrium. There is always metritis along with endometritis.

Signs and Symptoms.—In the acute condition there is fever rising upto 102° F. to 103° F., Malaise, vomiting, pain in the sacrum and hypogastric region. There is excessive discharge which is watery and if the attack coincides with menstrual period, the flow is excessive and lasts for a long time. The uterus is tender and slightly enlarged. The fornices are very often tender though no definite mass may be felt as there is usually infection of the tube also. The acute stage lasts for some time and then becomes chronic.

Diagnosis.—When the history of Gonorrhœa is known, it is easy to make out from the symptoms that the infection has gone higher up. When in doubt secretion from the urethra and the cervix should be taken for microscopic and cultural examination. If the symptoms come up after parturition or abortion, streptococcal infection may be suspected; but in such cases the temperature is high 104° F. to 105° F. the patient is very ill and whole picture is of a serious nature. Microscopic examination of the discharge from the cervix will confirm the diagnosis.

Treatment.—Patient must take complete rest. Hot applications to the abdomen are beneficial. Injection of Aolan, Lactumin or Lactalbumin, beginning with 2 C. C. upto 10 C. C. every fourth day has given good result. Curetting should be strictly avoided, otherwise the infection may get generalised and the patient's life be jeopardised. All local treatment should be stopped during the acute stage. Complete rest and good nursing will go a long way in putting the patient on the road to cure.

Chronic endometritis.—The acute condition may completely subside or it may become chronic. Chronic condition usually indicates that the reinfection is taking place from the tubes.

Signs and symptoms.—Backache, Leucorrhœa, of a watery type, menorrhagia and Dysmenorrhœa are some of the chief complaints from the chronic endometritis. In such cases one usually finds the tubes to be thickened, enlarged and tender.

Treatment.—Conservative line of treatment should be given a fair trial before operative treatment is undertaken. Injection of lactumin or aolan gives satisfactory result in most cases. Local treatment suggested by Hobbs should be undertaken only after admitting the patient to the wards. One part of Triodin to seven parts of sterilized glycerine are injected into the uterus by means of 10 c.c. record syringe and rubber catheter. About 10 c.c.

are injected and the excess is syringed off and the catheter left inside for 6 hours. This line of treatment has given good results in many hands. Treatment of the cervix with acriflavine should be carried out. Curetting of the cervical canal and the uterus followed by application of Iodized Phenol may be done if the tubes have escaped infection.

Salpingitis. Tubal infection can be prevented if proper treatment is adopted during pregnancy and if the patient takes complete rest during menstrual period. If the infection is mild and early treatment is adopted the tubes will not be permanently damaged and the patient may be saved from the stigma of sterility. I had recently a case of this type, and I should like to report the case here:—

Miss L. W., age 16, prostitute, came for pain in the abdomen and purulent discharge. Temperature 100° F. Pulse 98; she had her first visitor only two days before her last period, which had taken place seven days ago. The pain started on the fifth day of the period that is seven days after the last act. On examination I found pus coming out of the urethra, vaginitis and cervicitis were present; and there was also tenderness in the right fornix. There was no definite mass to be felt in the fornices. The urethral and cervical discharges were positive. She was treated on the lines suggested in this article. Six injections of Aolan were given, in addition. She was cured within six weeks. A fortnight ago she came to me complaining of Amenorrhoea of 4 months. She is pregnant and free from any discharge. This case clearly shows how pregnancy takes place even if the tubes may be inflamed provided the infection is not virulent and treatment is immediately given.

Usually the tubes get sealed up and a pyosalpinx or hydrosalpinx is formed, depending upon the virulence of infection. The contents of pyosalpinx soon become sterile. Not infrequently the ovaries also are infected giving rise to tuboovarian abscess. There is at the same time pelvic peritonitis which leads to adhesion with intestines and the neighbouring viscera. If the infection is virulent, the abdominal osteum of the tube may not be sealed and the pus is directly poured into the peritoneal cavity giving rise to general peritonitis. I was called to see a case of this type a year ago. She died before anything could be done for her as she came too late. Postmortem examination showed the tubes open and full of pus which was trickling down into the peritoneum. She developed peritonitis soon after her menstrual

"THE EMPLOYMENT OF ARGOLAVAL IN OPHTHALMOLOGY"

By Dr. Tiber Nomay.

FROM THE BUDAPESTH ROYAL HUNGARIAN STATE CLINIC
(Director: Professor Dr. Jos. Imre, Jr.)

INTRODUCTION.

LUNAR caustic which is rightly employed extensively as a disinfectant and astringent, has the well-known disadvantage of causing a strong burning sensation in the eye. The endeavour to secure a preparation of equal efficiency, which does not exhibit these disadvantages, is therefore justly conceivable. Up to the present, however, all silver preparations employed as substitutes for lunar caustic, exhibited considerably less disinfectant power than lunar caustic, probably because they contained silver in a mainly inactive, non-ionised form. The Berlin urologist, Prof. Casper initiated the idea to introduce a new silver preparation into therapy, in which the disinfectant and astringent effect of the nearly 100% active silver of argentum nitricum should be exploited.

This preparation was found by Zeltner in the form of the organic silver preparation, silver hexamethylenetetramine, having the formula $\text{Ag C}_6\text{H}_{12}\text{N}_5\text{O}_3$. This compound is supplied in a concentrated aqueous solution and as an ointment, under the name "ARGOLAVAL." The very favourable experiences gained with Argolaval and Argolaval Ointment in our Clinic, refer to conjunctivitis, corneal ulcers of a certain type, chronic tarsal suppurations, trachome, etc. The Argolaval preparations were further employed for disinfection in conjunctival preparatory operations.

Experience in Conjunctivitis.

These refer to several hundred cases. The instillations, contrary to those of argentum nitricum, are absolutely painless. Exact notes were taken of the progress of healing, especially in such cases in which both eyes were infected by catarrh, of which there were a great many. The more severely infected eye was treated with Argolaval, the less severely infected eye being simultaneously treated with another silver preparation (lunar caustic, argentannin, protargol etc.) for an equal number of times. In every case the superiority of Argolaval in acute and subacute conjunctivitis was invariably demonstrated. In the more strongly infected eye, treated with Argolaval a reduction of the discharge of the acute catarrh, a fading of the inflamed colour of the conjunctive etc., was evident in, on an average 6 days, while the same result was only achieved in, on an average 13 days in the eyes treated with lunar caustic and other preparations. In chronic conjunctivitis Argolaval may be regarded

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as equal to the ordinary approved remedies, such as zinc, resorcin etc. In acute and subacute inflammations it is advisable to instil 10 to 20% Argolaval solutions 3 to 4 times a day. These solutions can be prepared from the Argolaval on sale, according to the following prescription:

R Argolaval ... 1 to 2.
Aqua dest. ... ad 10.

It is more effective to carry out the instillations if the eyelids are inverted with the aid of a Desmarres spoon, and the discharge from the conjunctive has previously been rinsed out with boracic. In cases of very severe ophthalmia, 25 to 30% solutions may be employed. For chronic inflammations one should employ 5% Argolaval solutions several times a day. A further increase of the effect may be achieved in the majority of cases, by a subsequent treatment with Argolaval Eye Ointment. In such cases it is advantageous, to bind up the eye for 5 to 20 minutes. In rare cases an individual sensitiveness to Argolaval may occur, and special care should be exercised on the incidence of conjunctival hyperaemia and discharge.

Experiences in Trachoma.

These refer to the cases of over 200 patients. By means of comparative treatment of one eye with Argolaval and the other with lunar caustic, the excellent superiority of Argolaval was again demonstrated. The following special advantages may be cited: Rapid subsiding of the catarrhal symptoms in fresh, strongly discharging cases, rapid fading of the colour of the conjunctiva, already after a few days applicability also in cases of pseudomembranes (in such cases lunar caustic is contra-indicated), no danger of argyrosis in contrast to lunar caustic, no painful or burning sensation, even on protracted use. It is very important that in view of the danger of argyrosis being obviated, argolaval may be placed into the hands of patients for self-treatment for protracted use, and that owing to the treatment being free from irritation, it can be employed both for adults and for children, while owing to the burning sensation of lunar caustic, many patients object to this treatment and thus the infection is spread further.

Concentration: instillation of 5-25% solutions with inverted eyelids. It should be mentioned that the conjunctiva which has become tanned by treatment lasting months and even years, also tolerates the 50% solutions very well.

Diseases of the Cornea.

In these cases the Argolaval preparations have a large field of application. In the first place there are the border abscesses of the cornea, especially ulcus catarrhalæ, classified among the catarrhs. In such cases the dispensing of Argolaval Ointment 2 to 5 times per day, according to the severity of the case is the most suitable. Owing to subsequent bandaging of the eye for 15 to 20 minutes: Increase of the effect. Surprisingly rapid healing, in several cases 6 to 8 small infiltrations were absorbed in 2-3 days.

Trachomatous Pannus, Swimmingbath Conjunctivitis.

About 60 cases of trachomatous pannus were healed by the Argolaval

treatment. The cornea rapidly clears up, leaving behind very fine dimness, and in cases in which the lesser affected second eye was treated with dionin, the end result proved that Argolaval was in no way inferior to the hitherto sovereign dionin. Argolaval also proved successful in swimmingbath conjunctivitis, the small number of these cases hitherto treated, do not, however, allow of detailed deductions being made.

Tearsac Inflammations.

The great success of the Argolaval treatment of tearsac inflammations is all the more interesting, as hitherto, owing to the lack of results, the conservative methods of treatment have been very much relegated to the background, in favour of the operations for drawing off the tears offering a complete result. In cases of chronic dacryocystitis 10 to 20% Argolaval solutions were squirted into the tearsac through the canaliculus, after expression of the tear secretion. In this manner especially such patients with tearsac suppurations were treated, in whose cases the delaying of the operation caused no danger to the eye. In seven cases complete healing was achieved by the above method of treatment. In the case of one of our patients, both of whose tearsac were about equally clinically purulently inflamed, the left eye was treated with Argolaval injections, while the right eye was treated with boracic acid. This procedure was a method of explaining the role of mechanical purification. The success was surprising. With a treatment every second day by Argolaval, suppuration ceased within a week. No pus could be expressed from the tearsac, and the flow of tears through the hitherto obstructed tear-nose duct again became free. The tearsac on the other side, however, remained unchanged during the same period, and had to be operated. In a further 6 cases the formation of pus ceased after 4 to 6 treatments, and we were able to secure a complete result also functionally. Attention must be expressly drawn to the importance of the successful treatment without operation, as after extirpation. Sacci. lacr. segregation of tears becomes impossible, and the operation with the necessary postoperative treatment also takes at least a week. Apart from this, the operation is technically not very simple, and for the patient it means subjectively a fairly unpleasant experience. The colourlessness of the Argolaval solutions is of special advantage for injections into the tearsac, as it has even happened to ophthalmic surgeons with the greatest experience, that the solution penetrated into a wrong direction, and that the coloured subcutaneous tissues, left permanent and disfiguring brown spots, so that criminal proceedings have followed, a danger which is obviated by Argolaval. The author therefore recommends the application of Argolaval, in all cases in which for other reasons a conservative treatment appears inexpedient, according to the above described method.

Disinfection of the Conjunctiva prior to operations.

The good results achieved in the treatment of inflammations of the conjunctiva and cornea, were an inducement to also employ Argolaval for the

disinfection of the conjunctiva prior to operations. The trials over more than a year in this direction, also furnished the best results. For the purpose of sterilising the conjunctiva, instillations of 10 to 20% Argolaval solutions were applied 3 times daily, or the Argolaval Ointment was employed. Generally speaking the employment of the Ointment also proved a greater success in these cases. Tests in vitro are being carried out. In this connection, attention should be drawn to analogous tests already published by A. Blank (*Klinische Wochenschrift fuer Augenheilkunde*, Vol. 85), which furnish a complete experimental basis for the clinical experiences gained.

Bacteriological Testing.

The bacterial flora of the secretion from the conjunctive was minutely examined during treatment in more than 100 cases. In these cases particular attention was paid to the pneumococcus, practically the most important pathogenic micro-organism for the eye. In every case pneumococcus disappeared 24 hours after the commencement of the treatment. Very often, after 24 hours already, the pneumococcus could no longer be determined in the nutrient medium. To what extent Argolaval is superior to lunar caustic, with regard to its first class bactericidal effect, is proved by the comparative tests carried out on both eyes of the same patient, showing identical bacteriological results. Pneumococci on the conjunctiva proved to be more resistant to lunar caustic than to Argolaval. Similar conditions prevailed with staphylococci and gonococci. It is interesting to note that the Morax Axenfeld diplobacillus could occasionally be found in the secretion of the conjunctiva treated with Argolaval. Simultaneously, however, a considerably more rapid improvement of the process set in clinically and subjectively. In the treatment of diplobacillus-conjunctivitis it is, however, advisable to recommend zinc instillations along with the Argolaval treatment.

Conclusions.

There is no doubt that the advantages of Argolaval described above are due to its chemical composition. As already mentioned at the beginning, we are dealing with an organic silver compound having the character of a double salt and a pronounced semi-complex fixation of the silver. We have determined by experiments in the testtube, that Argolaval precipitates albumin to a much lesser extent than lunar caustic. If equal quantities of blood serum are brought together with equally concentrated solutions of Argolaval and lunar caustic, then $2\frac{1}{2}$ times as much albumin is precipitated by lunar caustic than by Argolaval. This fact is of great importance for the tissue reaction produced by these preparations and offers an explanation for the eminent non-irritant properties of Argolaval on the eye. We know, however, that this tissue reaction stands in co-relation to the bactericidal effect. With regard to the superiority of Argolaval over lunar caustic, the urotropin components may be of importance, as also the fact that, as an alkaline silver solution, the Argolaval solution oxydises organic substances far quicker than the naturally reacting argentum nitricum solution.

period. This case also shows the danger of infection spreading up during the period.

Signs and Symptoms.—During the acute attack there is pain in the lower part of the abdomen. The micturition and defæcation are painful. Sometimes patient comes for painful defæcation with passing of mucus and blood; these cases may be mistaken for dysentery. There is fever, and vomiting may be present. Only by manual examination the real nature of the disease will be known.

Treatment.—Treatment should be conservative during the acute stage. Complete rest, antiphlogistin to the abdomen, injection of milk, and nourishing diet are useful. The attack soon subsides. If abscess points in the vagina it may be opened per vaginam. Operative treatment for removal of tubes should not be undertaken during the acute stage. Every case of salpingitis does not necessarily need operative treatment. Conservative line of treatment should be given a fair trial. In support of this statement I would like to report the following case:

Miss T. H. age 23, a prostitute, complained of pain in the abdomen, fever and bleeding per vagina. The bleeding could not be checked for nearly a fortnight. When I was called to see the case, I found a tender swelling of the size of a cricket ball just above the left Poupart's ligament. There was tenderness on the right side too but no swelling could be felt per abdomen. On P. V. examination it was found that the swelling on the left was the distended tube and that the right tube also was swollen and tender. Examination of the patient was difficult as she was very ill. Twelve injections of Aolan and six injections of Gravitol (MLB) were given. The bleeding stopped and the swelling practically disappeared. She is free from the trouble for the last six months.

If in spite of this treatment the patient is not relieved of her symptoms, operative treatment should be resorted to. The affected tube should be removed and the uterus and other tube and ovary if healthy be preserved. If both the tubes are disorganised uterus along with the tubes should be removed. Every effort should be made to preserve the ovaries if they be healthy.

Gonorrhœal Arthritis.—This is just like the picture seen in male. The knee joints are chiefly affected.

Treatment.—Local treatment of the cervix and urethra essential to cure. Injection of Gonorrhœal Phyllocogen, P D & Co.,

or detoxicated Gonorrhoeal vaccine, Bengal Immunity Co., have given good results.

References:

- (1) *Common infection of the female urethra and cervix* by Frank Kild and A. Malcolm Simpson.
- (2) *Bondler's Medical Gynaecology.*
- (3) *Veneral diseases* by David Lees.

OCULAR MANIFESTATIONS IN GONORRHOEA

BY

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GONOCOCCUS is responsible for many blind eyes and the consequent shattered lives; and it is the duty of every responsible medical practitioner to reduce to an irreducible minimum the ravages of this fell disease.

The brunt of its attack is on the conjunctiva and through it the cornea and it is through these that so many blind eyes result.

It affects also the Iris when the Gonorrhoea is a Systemic infection, and also Choroid but that is a very rare complication.

While dealing with the treatment of the eye manifestations it is very important to remember that the treatment for the urethritis, whenever present, is also very important and should never be neglected.

1. CONJUNCTIVA.

The conjunctiva may be affected at any age. It is however grouped into two classes:—1. Ophthalmia Neonotorum affecting the new born baby and 2. Gonorrhoeal Ophthalmia affecting the children and the adults.

Ophthalmia Neonotorum.—70% cases of this are due to Gonococcus. The infection may take place before the birth of the child in the uterus of the mother but that is very rare. Infection may take place at birth through the infected cervix or vagina of the mother when the child is being delivered. But very often the infection is immediately after birth when the baby is being washed and the infected secretion from the mother's cervix or vagina carried into the eyes of the baby inadvertently, by the nurse or the dai.

Incubation period is from 1 to 3 days. The more acute the attack the shorter is this period.

Clinical picture is unmistakable. For the first 5-6 days there is intense chemosis of the conjunctiva. The eye is very sensitive. Lymphatic glands in front of the ears are swollen and there is slight fever. The secretion from the eyes is like meat juice being serum mixed with blood. In the second stage of the disease the swelling of the lids gets less but the secretion is now pus which simply pours out of the palpebral fissure. This lasts from 4 to 6 weeks and the eye gradually returns to normal.

Treatment.—Prophylactic treatment has reduced the incidence of this disease to a great extent in Europe and should be rigorously enforced in India. This consists in putting into the newborn baby's eyes one drop of Silver Nitrate (3 grains to an ounce) immediately the baby is washed and this to be repeated on three successive days. Treatment: once the disease is well established, is to cleanse the eye very thoroughly every 2-3 hours with lukewarm Potassium Permanganate lotion (1-5,000) or with warm Boric Lotion. Canthotomy may have to be done if the swelling is so great that the eye cannot be properly opened and cleaned. Daily milk injections in one form or the other should be given intramuscularly. 2-3 leeches to the temple daily are of great value also. When the eye is a bit improved and the swelling much less, touching the eyelids with Silver Nitrate (2%) daily must be persisted in till the final cure is completed.

2. **Gonorrhoeal Ophthalmia.**—Here the infection is conveyed to the eyes by fingers, towels, handkerchiefs etc. If the patient himself is suffering from acute Gonorrhoea it is the patient's own fingers that convey the infection to his eye. If he is a right handed person, he generally infects his right eye and, if left handed, then, the left.

Treatment.—In this form of Ophthalmia there is a very great danger of the cornea being affected and therefore very energetic measures have to be adopted from the very beginning. These can only be done under the doctor's direct supervision and the patient is best admitted into a hospital where everything can be done for the patient in the way of regular nursing and attendance of the doctors at all hours of the day which is impossible in private practice. The same treatment as for Ophthalmia Neonotorum is to be adopted but more rigorously.

If only one eye is affected the treatment should be carried out with the patient lying on the side to prevent discharge from the affected eye flowing into the normal one and infecting it also. A

Buller's shield should be strapped on the sound eye till the affected eye gets healthy again.

Prophylaxis for the attending doctors and nurses in both the above forms of Ophthalmia is very important. While dressing or examining the eye, glasses should be worn so as to preclude any infected material being squirted into the attendant's eyes. Washing the hands carefully and dipping them afterwards into a strong antiseptic lotion should be made a ritual. The towels and other clothes used for the patient should be kept aside and washed and disinfected as soon as possible.

II. CORNEA.

Cornea is always affected secondarily to the involvement of conjunctiva and is much more likely to do so in Gonorrhoeal Ophthalmia.

1. Corneal Hazeiness. This may be seen in the course of the Gonorrhoeal Conjunctivitis.

2. Corneal Ulcers. May be—

a. Multiple and small and marginal.

b. Large, localised and single.

Both of these nearly always lead to perforation and its attendant sequela viz. partial or complete staphyloma or complete destruction of the eye.

Treatment is mainly "prophylaxis" and consists in treating the conjunctivitis very carefully. Once the cornea is affected it is generally a losing battle and all we can do is to try our best according to the conditions then prevailing.

III. IRIS.

The iris is rarely affected in acute stage of the disease. It is always when the disease becomes a systemic disease that Iritis is found. It is usually preceded or accompanied by Gonorrhoeal Arthritis.

The inflammation is of a serous type and does not as a rule give rise to many adhesions.

Treatment—Here milk injections and injections of gonococcal vaccines are of great importance. In addition to the usual treatment of iritis viz. instillations of atropine, saline purges, leeches to the temple, these injections should always be given. In cases of persistent iritis a focus should be suspected and very often prostate will be at fault. It should also be treated side by side by either

massage and irrigations or better still by diathermy in addition if that be available.

IV. CHOROID

Gonorrhoeal Choroiditis has been observed but it is very rare.

NOTES ON THE TREATMENT OF GONORRHOEAL URETHRITIS

BY

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ALTHOUGH much has been written on the treatment of gonorrhoea, the following few notes are based on my own experience on the treatment of acute and chronic Gonorrhoea. It is superfluous to add that this rather simple method of treatment has proved very successful in my hand.

Acute Gonorrhoea.—As a rule we do not get cases until the first stage of tickling at the meatus and a slight glairy discharge from the urethra have been replaced by painful micturition and a thick purulent discharge.

Abortive treatment has been tried in this first stage by several urologists with more or less success.

The mode of treatment as applied in the second stage with painful micturition and thick purulent urethral discharge is somewhat like this.

(1) *Rest.*—In spite of strong protests no perfect rest can be enjoined. Although absolute rest does not seem to be impeding, still it is sure that perfect rest greatly helps in cutting short the attack and want of rest decidedly prolongs the duration of the disease. Ordinarily, simply remaining at home and not going out of doors in the sun seem to be quite enough. One point to note in this connection is that on no account bicycle or horse riding should be allowed. I remember a case having been greatly aggravated by bicycle-riding during an attack of acute gonorrhoeal urethritis.

(2) *Drink and Beverages.*—The patients are always directed to take plenty of water between meals. Unless it is distinctly insisted upon taking water "between" meals, they start upsetting their digestion by taking unusual quantity of plain water im-

mediately after meal. In hot weather cold drinks, plenty of coconut milk, sherbets of sugar-candy with lemon juice are freely allowed. They all help to dilute urine and thus greatly assist in lessening the burning sensation in micturition. Of drinks, alcohol, pungent aerated water, tea and coffee are all interdicted. Fruits, lemon-juice, orange, papaya, are all allowed in moderate quantity, at regular hours, generally in the after-noon.

(3) *Diet*.—It is made as simple as possible. Dealing with Bengalis, plain boiled rice with vegetable soup without spices (except a little turmeric and coriander paste) are allowed twice. Potato, egg, fruit, green banana and palol boiled or fried or made into a curry are allowed in moderate quantities. Considering the fact that the patient will have to suffer at least for three weeks, one should be particularly careful that the digestion may not be upset or the patient does not get anorexic from too strict regime. Mucilaginous vegetables as boiled lady's fingers and poi stems are regularly allowed and some patients take them with relish. A little black pepper does not seem to do much harm. Dahi, simple or churned with water and with a little salt added to it is allowed once, twice or more if the patient desires, and all kinds of foods with much ghee are all forbidden. Further, green vegetables containing plenty of oxalates or not allowed.

For lunch and tiffin small quantities of sweet-meats with fruits are given.

(4) *Medicinal*.

For very acute cases hot water bath for the penis twice or thrice gives great relief to the patient.

To relieve painful micturition and to make the urine alkaline, it has been customary to give sodium bicarbonate (grs. 10 to 15), pot. citras (grs. 10 to 15) and Tinct. of hyoseyanus (m. 20 to 30) Ext. saw palmetto or Sanmetto is very useful to lessen painful micturition and one of them has nearly always been added to the above combination.

After two or three days, when the pain for micturition has somewhat subsided and general malaise has gone down to a good extent, sandalwood oil with copaiba and cubels is added to the above mixture. The preparation called Liq. Sandal Co. is a good combination and has been added in dram doses. Those who cannot stand the taste of sandalwood oil are given one of the several forms of capsule available, as Sandal midy, Gonosan and so forth. They do not upset digestion so much as Liq. Sandal Co.

This mixture is continued till the discharge ceases and remains so for at least four or five days.

(5) *Local Treatment*. After the pain in micturition and other acute symptoms, as fever, general malaise, local tenderness have subsided, urethral injection is started. A backflow urethral syringe, consisting of a hollow rubber ball with a long (8 to 10 inches or more) narrow gum-elastic tube dilated at the end is used in my free research clinic, one or two apertures are so placed just behind the dilated end, that the flow of water coming out of the tube is directed backwards and the water comes out from the urethral canal. The tube is smeared with sterile boric ointment before use. 5 to 10 or 20 per cent. argyrol solution is used after the patient has immediately passed urine. The method of injection is usually shown to the patient and he does it himself twice a day. In most cases the discharge increases for the first two or three days to the dread of the patient, but it gradually comes down. The injection is discontinued as soon as the discharge stops.

(6) *Vaccine Treatment*. To prevent any sequela and to expedite the cure, the patients are given injections of gonococcus vaccine, sometimes with casein and organic iodine in the form of gonurethretin (B. I.) A course of six graduated injections twice a week is found quite efficacious in most of the cases. In some, a further course becomes necessary.

The acute cases are found to respond very satisfactorily to this method of treatment. The cases are cured in three to six weeks.

Chronic Gonorrhœal urethritis.—Cases of chronic urethritis or gleet, so far as we have been able to treat, are very often of posterior urethral type and nearly always complicated with chronic prostatitis. The following mode of treatment has been found satisfactory.

(1) *General*.—No strictness is enjoined with respect to rest. The patient is directed to take plenty of water in between the meals. The diet is made to consist of simple food without fish, egg and flesh. Being Bengalis, they were allowed boiled rice in both the morning and night meals. Chapatis or any flour preparations is prohibited with good results.

(2) *Medicinal*.—No internal medicine is usually resorted to. In some cases, sandal oil capsules are used with benefit.

(3) *Local*.—This is the important part of the treatment. Argyrol or protargol is generally used in high percent as 20 grains in an ounce or more. The same backflow syringe is used here,

The injections are used twice or thrice a day, immediately after urination.

(4) *Prostatic massage*.—This is the most important part of the treatment. The middle finger is smeared with boric ointment and is introduced into the rectum and the prostate is gently squeezed from before backwards for several times. The massage is carried on twice a week immediately after urination. It is continued for three to four weeks, which generally suffice for the majority of cases. It is discontinued as soon as the tenderness over the perineum disappears.

(5) *Vaccine treatment*.—Lastly subcutaneous injections of gonococcus vaccine often with casein and yatrien are resorted to. A stronger dose is used here than in the acute cases. A course of 12 graduated doses is usually arranged for.

The usual period of cure in my experience is six weeks to three months.

THE VALUE OF ANAESTHETICS IN RELATION TO THE TREATMENT OF VENEREAL DISEASES.

BY

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IN the successful treatment of some of the complications secondary to venereal diseases does the question of anaesthetics arise. These are few occasions when the services of the anaesthetist are as essential as those of the specialist. It is the purpose of this article to discuss the value of methods in common use and throw more light on the recent advances.

General anaesthesia by the open method or through Junkers apparatus with either pure chloroform or mixture of chloroform and ether has been the favourite with many. This is unnecessary, inconvenient and even hazardous to the patient particularly where the surgical interference, involved in the venereal practice, is of the nature of minor operations. Nor is it fair to let the patient suffer from the unpleasant sequelae such as nausea, vomiting, headache, retention of urine etc. Probably far more disagreeable to the patient than the malady for which relief is sought. The ideal is therefore one that interferes least with the normal routine of

the individual while at the same time it confers absolute freedom from pain of surgical trauma. Some form of local analgesia fulfils this ideal. Analgesia obtained by surface action of cocaine is satisfactory enough in dilatation of urethra for strictures. Muscular relaxation of the compressor urethra is not so pronounced as absence of pain sensation. Difficulty is encountered on this account in the dilatation of some impassable or impermeable strictures. Besides, the drug in common use is cocaine which is highly toxic and an injudicious administration of a large dose for local application is fraught with grave consequences. Cases are on record of toxic effects produced with a drachm solution of 5% cocaine. It appears the permeability of urethral mucosa is greater than that of nasal bucco-pharyngeal, laryngeal or œsophageal. Novocaine is by far less toxic but is inferior to cocaine as a surface anaesthetic. Percaine, recently introduced to the medical profession by the Clayton Aniline Company, London, is recommended as a good substitute for novocaine. My experience of it as a surface anaesthetic is so little that I cannot venture to pronounce an opinion. The use of this method is strictly limited to dilatations of urethral strictures and is unsuitable in all other procedures which come within the purview of a venereologist. There remain only two forms of local analgesia, namely caudal block and sub arachnoid block for consideration.

Sub-arachnoid block or spinal analgesia as it is more commonly termed is no doubt a very useful method. It is definitely contra-indicated in subjects of pronounced arteriosclerosis, toxæmia and in those whose myocardium is under suspicion. It cannot therefore be employed as a routine method. Caudal block or extra-spinal or extra-dural block carries with it little or no risks at all. This special feature of maximum safety of the method lends support to its being universally employed.

By caudal block is meant the introduction of the needle through the sacral hiatus and the deposition of anæsthetic fluid so as to bathe the nerves, with their dural sheaths as they traverse the sacral canal. In other words it is an extensive nerve block. Sacral Hiatus is a triangular or oval depression situated at the junction of sacrum and coccyx and results from the non-closure of the laminae of the last sacral vertebra. The defect is bridged over by a tough fibrous tissue. Thus sacral hiatus is the lower opening of the spinal canal. It is bounded proximally by the spinous process of the fourth sacral in the middle line and laterally by prominent long tubercles called sacral cornua. Sacral canal is the

spinal canal of the sacral region and is filled with loose fatty tissue rich in blood vessels. The contents of the epidural space (sacral canal) are:

- (i) The dural canal with the lower part of cauda equina and its termination filum terminale.
- (ii) Sacral and coccygeal nerves.
- (iii) Sacral intra-spinal venous plexuses.

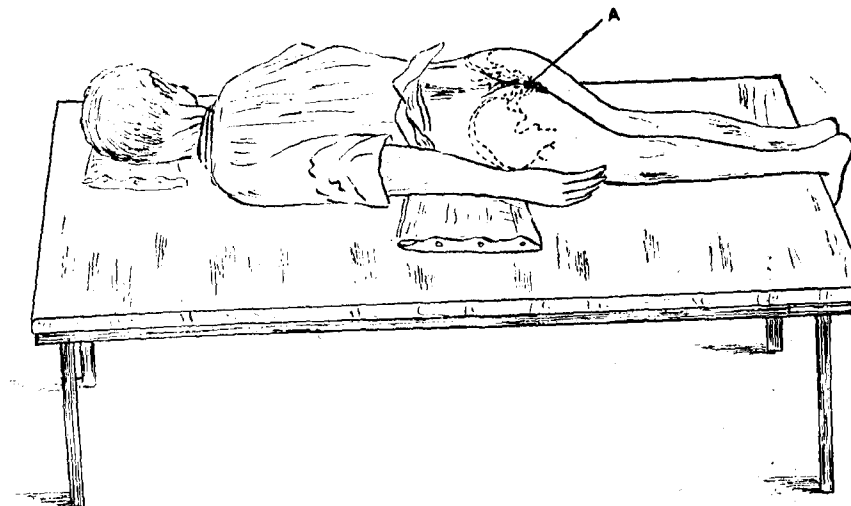
Technique employed is after Labat.

The patient lies on his face (prone position with arms by the side on a thick pillow beneath the hips to elevate the sacrum. The skin over the proposed site of injection is sterilized with rectified spirits. A sterile towel is placed over the lower part of the Glutei and back of thighs. The tip of coccyx is now felt and palpation is proceeded with till Sacral Hiatus is reached. The depression is easily identified in the majority of cases by the



well defined sacral cornua and spinous process of the fourth sacral. With the tip of left index finger over the hiatus as a guide a spinal needle with stylet in is introduced beneath the finger at an angle of 20 to 30° to the horizontal till the point of the needle is stopped by the anterior wall of sacral canal. Undue force is as unnecessary as it is undesirable. The hub of the needle is depressed towards gluteal cleft (axis of the needle being almost parallel with the horizontal) and needle advanced gently up the sacral canal for a distance of about an inch. The needle should not be advanced beyond 2/5" below an imaginary line joining the posterior superior iliac spines for fear of puncturing the dural sheath which terminates at this level (3rd piece of the sacrum). The stylet is withdrawn and some time is allowed to see if any cerebro-spinal fluid (C. S. F.) or blood escapes. If it does it means that the theca and vein are

punctured. Both are to be avoided with care and gentle handling. In case of accident, the needle is withdrawn partly and again some time is allowed to elapse till the needle is dry. A 20 c.c. record syringe fitted with 15 c.c. of 2% novocaine solution with (1 in 1000) adrenalin hydrochloride is attached to the needle and the piston is slightly withdrawn to aspirate canal. If blood enters the syringe it means that the needle has punctured the vein in which contingency the needle will have to be partly withdrawn and reintroduced in a different plane to avoid the vessels. When blood flow has ceased or when puncture has been successful the anæsthetic solution is slowly injected. The total quantity varies from 25 to 30 cc. of 2% novocaine according to the build of the subject. The needle is then withdrawn and the part sealed with collodion or adhesion plaster. Intra-thecal or intravenous injections are dangerous and to be avoided by making doubly sure that neither theca nor vessel is punctured by the above tests. The patient is now turned on his back. It takes 15 minutes for the analgesia to develop.



The immediate effects on the patient are increased pulse and respiration rates, numbness commencing in the lower extremities and later on in the perineum and a sensation of transient dizziness. There is no need for anxiety and the patient is assured that these pass off within a short time. Relaxation of the anal sphincter is the most reliable test that analgesia has set in. All operations on the external genitalea, perineum, urethra, prostate, bladder, anus and lower part of rectum can be done with perfect analgesia. (Labat.)

The technique can easily be mastered after some practice on the cadaver. The armamentarium is economical and available all over. The services of anaesthetist are not required. The method is suitable to all cases without an exception. Failures are few and are due to incorrect technique, impermeability of sacral hiatus and decreased permeability of nerve sheaths. A preliminary intradermal wheal over the sacral hiatus and massage till oedema of injection subsides, make for success in nervous individuals. Over a series of 100 cases there has been one failure due to inexperience in the early series of cases and five cases of giddiness lasting for 3 to 5 minutes. Knowledge of anatomy and correct technique are the keynotes of success. I have no hesitation in recommending the method to a more extensive trial in our country.

BUBO

BY

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BUBO is a painful enlargement of groin glands due to venereal infection. It has all the classical signs of inflammation, as pain, swelling, redness, warmth and impairment of function. As regards etiology, diagnosis and treatment, bubo can be usefully classified as climatic bubo and venereal bubo.

Climatic Bubo and lympho-granuloma Inguinale long recognised in tropical countries, have been demonstrated to be a single entity. Clinically and pathologically they are identical, their etiology is the same and they are due to an infection with an ultra-microscopic filter-passing virus. Climatic bubo is characterised by painful swelling of groin glands associated with slight demonstrable lesion such as a tiny erosion round about genitalia. The primary lesion through which the virus enters, heals up quickly. It occurs only after venereal exposure. It is described by some venereologists as the fourth venereal disease. The incubation period is three to four weeks after coitus. Painful groin glands are shelled out enmasse by enucleation under chloroform and sent to the pathologist for section cutting and analysis. On cutting open the

gland with a sterile knife, pus is derived from the enucleated gland, which on culture proves to be sterile. Out of this sterile pus, Frei's Antigen is prepared and sent in sealed ampoules for testing bubo.

In 1925 Frei devised the intra-cuti reaction for cases of Lymphogranuloma Inguinale using a heated saline dilution of pus, aspirated from a softened Inguinale bubo as Antigen. The person from whom the antigen is to be prepared should be proved free from tuberculosis and free of any other venereal disease, past or present, by clinical examination and negative tests for syphilis, gonorrhoea and ulcus molle.

The gland from which pus is to be withdrawn, must be one that has undergone softening, but not fistulation. Bloodfree pus is aspirated under aseptic conditions with a Record syringe. This is mixed with physiological saline in the proportion of one part to five or six parts in a sterile tube and immediately put up in $\frac{1}{2}$ to 1 c.c. doses in Jena hard glass ampoules. So prepared it is heated to 60°C. for 2 hours over a water bath and the following day at 60°C. for 1 hour. Heating to 80 degrees c. yields a much less active antigen, 100 degrees c. destroys antigenic properties.

Fresh and heated material should be tested for sterility by culture under aerobic and anerobic conditions at room and incubator temperature. Frei's antigen should give negative reaction in skin of normal control and patients suffering from ulcus molle.

Inject .1 c.c. of Frei's antigen intradermally on the anterior surface of fore-arm. As a control, inject .1 c.c. of normal saline intra-dermally on the same fore-arm just 1" below the former. Watch the reaction, if any, next day after 24 hours. Positive reaction is diagnostic of climatic bubo. If there is very slight or no reaction, wait for 48 hours to 72 hours to watch for delayed reaction. If a patient suffers from climatic bubo even once in his life-time, Frei's Antigen will be positive, as demonstrated by a raised papule. There is no reaction in venereal bubo, filarial bubo and other chronic Lymph-adenitis. It has been found that only climatic bubo cases respond to the test by showing a raised inflammatory papule in the injected antigen area within 48 hours. So Frei's Antigen is a clinching test for climatic bubo.

Microscopical appearance.—Section shows many layers of small round or oval abscesses, surrounded by epithelioid cells. The gland is almost filled with granulation tissue consisting of lymphocytes, plasma cells, fibroblasts and large cells with 1 or 2 round or oval nuclei, together with few giant cells of Langerhan type.

Climatic bubo may be bilateral or unilateral. The adenopathy may be minimal; spontaneous resolution may occur without suppuration. Some take several months to resolve.

Three outstanding facts are:

- (1) The exquisite predilection of the virus for the lymphatic stream.
- (2) In whatever part of the system, the virus gains entry, there it excites a similar reaction.
- (3) That the several syndromes-climatic bubo (lymphagranuloma inguinale), genital elephantiasis, rectal strictures etc., are dependent upon the lymphatic path taken by the virus, the sexual incidence being associated with differences in the lymph drainage of the pudenda in the male and female.

Differential diagnosis. Climatic bubo is to be diagnosed from venereal bubo, filarial adenitis and bubonic plague. Frei's antigen is positive only in climatic bubo cases.

Treatment. Early cases of climatic bubo respond to non-specific protein therapy such as milk injections. Advanced cases are not amenable to protein shock. In such cases the only rational treatment is to enucleate the painful groin glands under chloroform and allow the wound to heal by granulation tissue. Usual antiseptic dressings are applied.

Venereal Bubo. Is characterised by painful, inflamed swelling of groin glands associated with lesion round about genitals, as urethral discharge or soft sores in the penis or scrotum in males or cervical discharge or soft sores on vulva in females. Groin glands associated with primary syphilitic chancres, are usually hard, painless and discrete. If they are inflamed and painful, it may be due to mixed infection.

Diagnosis. Frei's Antigen is negative in cases of venereal bubo. The contents of venereal bubo are not a collection of sterile pus as in climatic bubo.

Treatment. Non-specific protein therapy, as sterile milk injections are very effective. Give hot boric fomentation locally. Inject 5 to 10 c.c. of sterile milk every alternate day intramuscularly and massage the part well after injection. It produces severe reaction, as high temperature and pain. With 2 or 3 milk injections, bubo subsides and pain diminishes. Try to avoid incision as far as possible. Give protein shock before bubo shows signs of suppuration. When the bubo fluctuates, aspirate the pus with a

syringe and wash the cavity with 1 in 25 Tr. Iodine. If opened, bubo takes more than 2 months to heal. Groin glands associated with chancre or hard sore respond very well with antisyphilitic treatment and no milk injection is necessary in such cases.

Reference:—

Dr. H. S. Stamm, M.D., "Climatic Bubo etc.," in the Proceedings of the Royal Society of Medicine Vol. XXVI, No. 1, November 1932.

INGUINAL GRANULOMA

BY

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Synonyms.—Ulcerating granuloma of the pudenda, granuloma venereum, Infective granuloma.

Definition.—Inguinal granuloma is a chronic granulomatous affection of venereal origin attacking the generative organs from which it spreads to the inguinal regions and perineum and occasionally to the oral cavity.

History.—The disease was described as a clinical entity by Conyers and Daniels in 1896 who discovered the same in Negroes in British Guiana. In 1882 McLeod described a serpigenous ulceration of the groin in natives of India. Since then papers have appeared on the subject by numerous research workers. In the year 1905, Col. Donovan, Late Physician, Government General Hospital, made several investigations and described the causative organism of the disease about which investigations are being carried even up to the present day.

Climatology.—It is widely diffused in India, British Guiana, South Africa, Northern Australia, Southern United States. A similar or identical condition has rarely been met with in Europe.

Etiology.—The exact causative organism of the disease is still undecided, but, that which is most commonly accepted as the cause of granuloma is the oval bacillus described by Donovan.

He says "In scrapings from the deeper parts of the growths, small forms oval in shape, about $1\frac{1}{2}$ to 2 un. in length are found in the epithelial cells of the stratum malpighii or in the macrophages usually in large numbers, either scattered or in small round compact groups. By the Romanowsky method of staining the cells possess a well defined contour with a dark pink protoplasm

therein, in the centre of which there exists a long flatly oval very dark pink chromatin mass." But animal and human inoculations have failed to produce characteristic lesions. While it cannot be proved that the Donovan organism is the cause of granuloma its presence still identifies the disease. Nor has any one come forward after Donovan to prove any other causative organism.

There is a confusion that Leishman Donovan (Kala Azar) bodies were demonstrated by Donovan from the scrapings of the disease but it has never been so.

The subject requires further research.

Communicability. The disease is generally transmitted by sexual intercourse and auto-inoculation.

Age and Sex. The greatest frequency is during active sexual life namely 20 to 40. Extremes of age as 14 and 55 are not exempt from the disease.

It cannot be definitely said which sex is more susceptible to the disease. Males and females are equally liable. The statistics of the Government Royapuram Hospital is 27 males to 26 females and in the General Hospital 156 males to 111 females. Hence it is incorrect to state that it is more common in women.

Immunity. The white race seems to have a relative immunity. One attack does not produce immunity. Recurrences and frequent breaking down in cured cases are the rule.

Incubation Period. According to Manson Bahr the incubation period is from 2 to 8 days after sexual contact.

Pathology.—Microscopical examination of the new growth reveals that it is made up of nodules or nodular masses which show;

- (1) Desquamation of the superficial layers of the epithelium.
- (2) Infiltration of the corium with round cells.

This dense and diffuse round cell infiltration of the corium is the characteristic feature of the lesion. Near the surface of the ulcer polymorphonuclears are numerous and may be found between the epithelial cells. The connective tissue consists of swelling or hydropic degeneration of the white and yellow elastic fibres which is replaced by new connective tissue. There is no giant cell system; no tubercle bacilli.

Symptoms and Signs. The disease first shows itself as a papule or vesicle usually on the penis or labia majora. It is about the size of a pea and when the process extends the papule ruptures and exudes a purulent fluid. Unlike most papules that rupture it

does not heal, but on the contrary spreads by slow proliferation. In the early stage it is mistaken for a soft sore but the characteristic angry look and the purulent discharge met with in soft sores are absent. Moreover, the typical commencing lesion is that of exuberant granulation tissue which is soft in structure and red in colour. There is usually destruction in the centre of the growth but the edges are exuberant and usually overlap the healthy skin edges. From this stage of a small circular ulcer the disease advances in two ways.

1. By continuous eccentric peripheral extension.
2. By auto-inoculation of an opposing surface.

It has a distinct predilection for warm and moist surfaces such as the groin, folds between the scrotum and sometimes the anus. Concurrent with the spread of the infection, certain areas present sclerosing patches of healed areas which later on break down and present the granulating masses. The disease is very slow in progress taking years. A characteristic well developed lesion presents a large irregular granulating area well raised above the surface, healing in certain areas and spreading in certain other regions. When the cicatrix breaks down it yields a mucoid exudate having a peculiar odour.

The *sequela* of the condition are sometimes (1) extensive cicatrization and deformity. I have seen a case whose genitals were almost destroyed, the skin of the groin contracted with the result that the patient had to walk just like one with a congenital dislocation of the hip.

(2) Obstruction of the deep lymphatics and solid œdema of the parts. This occurs in women, the labia getting into pseudo elephantiod condition with thickening of labial skin. Sometimes the labia are replaced by a crowding of polypoid masses.

(3) Stricture of the anal canal is not usually common. Sometimes the whole canal is destroyed involving the rectum and the patient dies of some inter-current disease.

The associated important features of the disease are:—

1. Glands are never involved. This is a point for diagnosis.
2. The patient never emaciates in spite of the chronic process.
3. The process is highly chronic and quite indolent.
4. The lesion is not very painful. It is amazing, in

some cases to observe a very extensive lesion present, yet the patient is not inconvenienced by it.

5. The Wassermann reaction is always negative unless syphilis is associated.
6. Pregnancy has no favourable or unfavourable effect on the granuloma lesions. John A. McGlinn reports three cases where the disease was far advanced involving the vulva and the posterior vaginal wall out of which one had a large Recto-vaginal Fistula. In all the three cases it was felt that delivery by the natural passages was contra-indicated on account of the danger of infection. Caesarian sections were done five times with no foetal mortality and one adult death.

Diagnosis. The diagnosis is based on the clinical picture, therapeutic test and according to the American authors, the bacteriologic findings. They are of opinion that with proper technic the characteristic organism described by Donovan will be found practically universally in all the untreated cases.

Differential diagnosis.—

- (1) *Malignant ulceration.*—In the advanced stage of the disease a mistake could hardly occur as there is rapid destruction of tissues, emaciation of the patient and enlargement of the glands. In the early cases it is a little difficult to differentiate the condition. The glands in early mild cancer are not enlarged and hence only a microscopical examination of a section will decide the diagnosis.
- (2) *Tubercular ulceration.*—(Lupus) Granuloma is usually limited to the pudendal region. Von Pirquet (quantitative) is negative. Tuberculosis elsewhere is absent. Associated tubercle bacilli, giant cell systems are not seen.
- (3) *Syphilitic ulceration.*—The absence of the Wassermann reaction, adenopathy, previous history of chancre easily differentiate the two conditions. There should be little reason for one familiar with syphilis to confuse the two diseases.
- (4) *Chancroid and Phagedenic ulceration.*—Chancroid is an acute inflammatory lesion with earlier or later bubo formation while granuloma is a chronic slow growing lesion without adenopathy.

Treatment.—Urea stibamine and allied preparations of antimony offer a specific treatment in a majority of the cases of inguinal granuloma. Local treatment and excision are of no value and X-ray while of some benefit cannot be used sufficiently long to effect a cure. Excision can be done if the affected area is small. Application of caustic with radiant heat has done good in some cases. In spite of this; the lesion breaks out after some time.

The first preparation used in the treatment of the disease is tartar emetic. Urea stibamine is less toxic and a larger dose can be administered at the same time. The dose is .1 to .2 grammes given intravenously twice a week. As regards the complete course no definite rule has been laid down. Each case has to be treated on its own line. A few cases healed completely with a total of 1 gramme while one or two cases did not show any improvement even after 2.5 grammes. The toxic effect of antimony is asthenia and emaciation. Hence the patient's general health should be watched during the course of the treatment in addition to recording the weight of the patient before each injection.

CASE REPORTS.

- (1) No. 287—Venereal Department—Government Royapuram Hospital, Madras.

Name :—Mr. G., Sex—male, age—33 years, native dist. Nellore,

Admitted—9-3-1933.

Previous history—Sore penis 13 years ago—No subsequent history of rash.

Present condition—A large granulating ulcer over the left groin extending as far as the perineum, duration 1½ years, no glandular enlargement, scarring over the skin of the scrotum and the pubis. The shaft of the penis entirely buried in the scrotum.

Investigations :—1. Dark ground illumination—Negative for *spirochaeta pallida*

2. Wassermann reaction: Negative.

Treatment :—11-3-1933—.2 gm.—Urea stibamine—I. V.

14-3-1933—.2 gm. "

18-3-1933—.2 gm. "



Case II. Female.

INGUINAL GRANULOMA—By P. NATESAN, M.R.C.S.

Case I.

To Face Page 679.

The ulcer almost healed and the patient was discharged at his request but he has not yet turned up.

The clinical photograph of this case is attached.

(2) No. R. 75—Venereal department—Government Royapuram Hospital, Madras.

Name—Mrs. R., Sex—female, age—30 years, native dist. Madras.

Admitted—17-10-1932.

Previous history—A small sore on the labia majora (left) 2 years ago.

Present condition—Elephantoid condition of both the labia, large granulating ulcer extending from the fourchette as far as the anus—No glands.

Investigations :—1. Dark ground illumination and Wassermann reaction Negative

Treatment :—4 injections of Urea Stibamine were given as follows :—

20-10-1932—0.1 gm.	Weight 70 lbs.
24-10-1932—0.2 gm.	„ 70 „
28-10-1932—0.2 gm.	„ 68 „
2-11-1932—0.2 gm.	„ 67 „

Patient showed signs of general asthenia. She was given rest and good nourishment. She was discharged on 10-11-1932 at her request and she returned on 21-4-1933.

Her condition was :—The anal canal was almost destroyed. The elephantoid labia is of the same size. Evidence of T. P. in the lungs and patient was having chronic diarrhoea.

This patient is still in the wards.

These two are typical cases of Infective granuloma. They are cited to show how in certain cases the disease responds even to a very small quantity of antimony whereas certain others do not show any signs of improvement.

I thank Major Mahadevan, F.R.C.S., M.R.C.P., L.M.S., Director of the Surgical Clinic of the Government Royapuram Hospital and Dr. C. R. Krishnaswamy, M.B., M.S., Honorary Venerologist for kindly permitting the use of the records of the Hospital. I am also indebted to Dr. T. Bhaskara Menon, M.D., M.R.C.P. (London) Pathologist, Government Royapuram Hospital, for his kind sugges-

tions. Dr. Mrs. Williams lady Sub-Assistant Surgeon deserves my gratefulness for taking the clinical photo of the female case.

References :—

- (1) Manson Bahr—Tropical diseases (1929).
- (2) Bhaskara Menon—Studies on inguinal Granuloma, Indian Medical Gazette—1933.
- (3) Donovan—Indian Medical Gazette 1905.
- (4) Still—Diagnosis and treatment of Tropical diseases.
- (5) John A McGleim—Granuloma inguinale (Nelson's loose-leaf living Surgery, Vol. VII.)

THE DIAGNOSIS AND TREATMENT OF SOFT CHANCER

BY

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SOFT chancre, which was called formerly a chancroid is the name given to a round or oval ulcer, very rarely seen anywhere except on the genitals, caused by an organism, a streptococcus first described by Ducrey. It is a non-syphilitic lesion, very rapid in its course followed by painful adenitis, generally on one side, resulting frequently in a bubo. These cases are generally seen in large numbers in cities like Bombay and Calcutta and are not very common in small towns in India.

The specific organism i.e., the Bacillus of Ducrey is a slender rod, generally grouped together in chains, gram-negative and non-spore forming. It may be cultivated artificially but with difficulty (on peptonised human skin and other special media).

A soft chancre has a very short incubation period. Within 24 hours a red, small, inflamed papule appears, becomes a vesicle the next day and in three or four days a pustule forms, surrounded by a hyperæmic area. The rupture of this pustule results in a typical round or oval ulcer, with cleanly cut edges and a clear, distinct outline. It bleeds readily and the discharge is profuse and purulent and is highly infective so that many chancres are seen on the genitals, as well as the adjacent parts like the thighs etc. By the confluence of several single chancres, a very large *chancroidal ulcer* may result.

The sores are usually situated in men on or under the prepuce, the preputial orifice, the corona glandis, the frenum and the fossa navicularis. In women, they are seen on the vestibule, clitoris and labia minora. They may be found also as a result of auto-

inoculation on the pubis, the inner surfaces of the thighs, the labia majora, the perineum and the gluteal region.

General characters. The *base* is covered with a yellowish membrane and bleeds readily, no induration is found in new ulcers and only noticed in old ulcers but here the induration is not much and is limited to the ulcer only. Greyish granulations. Yellow or greyish, creamy, purulent membrane or film, oedematous.

Periphery. Bright red.

Edges. Not raised, clearly cut or undermined, slight crenation, marked by a red line, sharp distinct outline.

Discharge. Profuse, purulent, yellowish and creamy.

Lymphatic glands. The neighbouring lymphatic glands i.e. in the groin are enlarged but only on one side in many cases. Very rarely the glands on both the sides are enlarged i.e. in mixed infection. The glands are enlarged, painful, tender, often suppurating, sometimes break through the skin if not treated, resulting in a *chancrelateral bubo*.

Modifications.

- (1) *Syphilitic infection.*—May occur at the same time and the ulcer then takes some of the characters of hard chancre and takes a long time to heal unless anti-syphilitic treatment is commenced early. Hence, the necessity for frequent microscopical examinations, so that, if it resists treatment for a long time and remains chronic when *spirochaeta pallida* is found, anti-syphilitic treatment is started at once. If facilities for microscopical examination are not available, as is the case in smaller towns in India, it is better to regard it as syphilitic and give anti-syphilitic treatment together with proper antiseptic dressings. In our experience, we have observed that the majority of these cases are of mixed infection and so we could obtain good results in the shortest possible time when "914" was also given, along with the treatment for soft-chancere.
- (2) *Induration.*—Is noticed when the chancreoid is old and chronic, takes on the appearance of a hunterian chancre. In these cases, probably mixed infection may be the result of induration.
- (3) *Hæmorrhage.*—May result if the artery to the frenum is eroded. A fliddle shaped ulcer may be seen extending on both sides of the frenum.

(4) If the case is not treated at all, ulceration increases rapidly so that parts of the prepuce may disappear in some places leaving the glans protruding from that part. Chancroid on the glans spreads more deeply than the syphilitic sore, so that it may even open into the urethra. On healing, great deformity of the glans is produced.

(5) Soft chancre is sometimes seen inside the meatus. Here it appears as a small ulcer with red edges and a yellowish white base.

It is distinguished from a syphilitic sore by palpating it with the fingers. The lips and the walls of the fossa navicularis are soft and not indurated in a chancreoid.

Complications.—

- (1) It may become *phagedænic*.—The ulcer is covered with a dark slough with an offensive, reddish-brown discharge. It spreads very rapidly destroying the glans and opening up the urethra.
- (2) *Gangrene.*—Spreads rapidly and destroys a large portion of the glans and even penis, if vigorous treatment is not carried on immediately; the usual signs of gangrene are found.
- (3) *Phimosi.*—Occurs in some cases as a result of inflammation under the prepuce due to a sub-preputial chancreoid.
Dorsal incision is performed and the chancreoid exposed and treated. Circumcision performed later.
- (4) *Paraphimosis.*—In a few cases, reduction by slitting and circumcision later; usual treatment for the chancreoid.
- (5) *Lymphangitis.*—Lymphangitis or inflammation of the lymphatics of the penis may occur as a result of infection due to the absorption of toxic products from the ulcerated area. The lymphatics are enlarged, painful and tender. A hardness is felt on the penis. There is swelling of the prepuce due to lymphatic absorption.
- (6) *Abscess of dorsal lymphatics.*—The lymphangitis results in some cases in suppuration due to infection by pyogenic organisms and abscess forms which has the

usual signs and symptoms and has to be incised and drained.

- (7) *Suppurating bubo*. The lymphatic glands become enlarged early, tender and very painful. The glands on one side are usually affected. Suppuration occurs in the majority of cases, especially in India, as many patients come for treatment after trying all kinds of nostrums frequently resulting in a suppurating bubo. The *simple bubo* is caused by ordinary pyogenic organism like staphylococci etc. This heals very soon after opening it and dressing it for a few days or after aspirating and injecting Tr. Iodi (1 in 20). The usual variety in these cases is the *Furulent bubo* due to the absorption of the specific virus in addition to the pyogenic organisms. It differs from the simple bubo in that the pus is highly infective causing soft chancres on inoculation. There is a certain amount of periadenitis present. If not opened, it bursts forming a large ulcer with the characteristics of a soft chancre (*chancreoidal bubo*). Secondary infection is common in these cases, as the groin is a very dirty region and abounds in many pyogenic organisms. This accounts for the chronicity of these wounds of incised buboes caused by soft chancre. There is plenty of discharge. It takes a long time to heal and so it is preferable not to incise it as far as possible but to aspirate and inject. An auto-vaccine prepared from the discharge in these chronic cases is very beneficial in hastening healing.

Aetiology.—Infection takes place directly by sexual-intercourse, very rarely indirectly. People with dirty habits, with long fore-skins and debilitated individuals are usually susceptible to this infection. It is not so common in India as in Europe and the west. People who are circumcised like the Muhammadans and Jews are not easily infected. One attack does not confer immunity as a rule and many attacks in an individual are common. More cases occur among the males than the females (probably due to females not usually seeking treatment early owing to modesty.)

Diagnosis.—Soft chancre should be diagnosed from (1) Syphilitic chancre (2) Herpes progenitalis (3) mucous patches (4) Scabies (5) tertiary gummatous ulceration (6) Epithelioma.

Examine the contour, edges, base, induration whether present or absent, its extent and character.

(1) *From Syphilitic chancre* :—

NOTE.	HARD CHANCRE.	SOFT CHANCRE.
Edges	Slope towards the ulcerated part within.	Sharp, undermined on its inner side and often rise abruptly from the normal tissue without to bright red line or halo. Tissues normal beyond the line.
Contour	Evenly round or oval.	Generally salients thrust out though sometimes even.
Base	Level with or higher than the edge, indurated. The induration extends for some distance outwards. On feeling it with finger and thumb, felt like a disc of India rubber or cartilage.	Level lower than the edge pitted or worm eaten in appearance. Slight inflammatory induration, a probe can be run under the edge. Chancroid is hard sometimes when old and healing but the hardness is limited to the ulcer only and does not extend beyond the margins.
Discharge	Serous, no blood, does not bleed readily; scant secretion.	Profuse purulent secretion, bleeds readily.
Pain	Painless generally.	Very painful.
Number	Single sore under the prepuce, between the labia-multiple sometimes.	Multiple sores generally
Microscopic examination of discharge or Scrapings	Serum contains Spirochaeta Pallida.	B. Ducrey S. Pallida if mixed infection
Auto - Inoculation	Is not Auto-inoculable.	Is auto-inoculable.

NOTE. <i>contd.</i>	HARD CHANCER. <i>Contd.</i>	SOFT CHANCER. <i>Contd.</i>
Adenitis	Adenitis bilateral, indolent, painless, enlarged, glands multiple, separately felt, very rarely suppurate.	Very painful, suppuration common, suppurating bubo formation; microscopical examination for <i>spirochaeta pallida</i> is the only method by which correct diagnosis can be made. Frequent examinations are necessary as there may be mixed infection.
Prepuce if affected	Oedematous, tough, India rubbery, dull livid in colour.	Oedematous sometimes but soft. Less dull and less livid in colour
Mouth of the prepuce if affected.		
(a) if fissures present	Edge is thicker and stiffer, fissure is open, tough hard feeling of the prepuce where affected	Edge soft and oedematous, edges in apposition and undermined.
(b) If ring or sores present at the margin of the prepuce.	Rounded edge of the ulcers, areola, indented base, sometimes the mouth of the orifice like a cartilagenous ring	Small circular, yellow plug on base may be seen inside. Induration late stages limited to ulcers only.

(2) *From Herpes progenitalis*: Herpes occurs as crops of tiny vesicles about the size of a pin's head, forming shallow little ulcers. Vesicles closely set, minute circles, in groups. After the top of the vesicle is removed, the underlying lesion is shallower than chaneroid. Base not pitted as in chaneroid. Itching or neural pain present. Crops of herpes appear and disappear.

(3) *From tertiary gummatous ulceration*: Sore deeper, sharply cut, punched out edge with crater like steeply shelving walls, tough, yellow wash leather like slough at the bottom.

(4) *Heh burrows*:—Distinguished by entrance at one end which is usually covered with a small scale and the

burrow under the surface in the form of a narrow ridge or mound.

- (5) *From Leukoplakia, mucous patches*.—Here the covering of the glans is wholly or partially thickened, raised into a tough flat structure. On the glans are seen here and there red patches without epithelium.
- (6) *From Epithelioma*.—Epithelioma occurs in aged persons generally, as irregular, papillated outgrowth; is easily recognised. But the other variety, diffuse infiltration—ulcerating early must be diagnosed from soft chancre.

The infiltration of the base, the appearance of the ulcer following infiltration and the microscopical examination help in diagnosing epithelioma.

Treatment:—Complete rest is essential and the patient should be confined to bed, as walking favours painful adenitis leading on to suppurating bubo. The patient should have sufficient nutritious food. He must wear clean clothes, which should be changed frequently. Our experience is that in labourers who are usually dirty and walk to the doctor and attend to other work in their homes and elsewhere, suppurating bubo appeared very early and had to be incised and dressed for a long time to heal completely, whereas in well-to-do people, who were taking complete rest and had good food, the buboes were not so troublesome or disappeared quickly, after aspiration with a syringe and injecting Iodoform emulsion. In some cases, no suppurating bubo developed.

The ulcer is cleansed several times daily with hot solutions of mercury perchloride (1 in 2000), potass permanganas (1 in 1000), carbolic acid 1 to 2%. Our own practice was to dress it with Eusol several times daily, if seen in late stages after cauterising with fuming nitric acid. The cauterisation destroys the upper part of the ulcer and a slough results, which falls off leaving a healthy area which heals rapidly.

Silver nitrate is used by some to cauterise and is also effective. Cases of phagedæna and extensive ulceration are also treated similarly by cauterising and dressing with Eusol until all the slough has dropped off, when antiseptic dressings like acriflavine etc., are used to complete healing. Actual cautery, zinc chloride paste, pure carbolic acid also have been used for cauterisation.

If there is only one chancre or a few chancres or even multiple chancres and there is not much oedema nor ulceration nor pain,

they should be canterised with fuming nitric acid and dusted with a powder consisting of Dermatol or Bismuth Subgallate.

The following recommended by Bayly is useful.

Dermatol.

Bismuth tri-brom phenol.

Mag. carb. levis. aa. $\mathfrak{Z}_{ss}$.

Pulv. amyli—a $\mathfrak{Z}i$.

Iodoform pulvis with mag. carb. levis and pulv. amyli is also very good but the odour is objected to by many. Aristol is also useful and may be used if no improvement is seen by the first two. Bismuth Formic Iodide may be used after the ulcer has healed to a certain extent. The old fashioned Lotion Nigra dressing or bin iodide dressing are still useful, if one cannot decide to use other dressings.

Hypertonic saline dressings several times a day should be tried if there is phagedana or extensive ulceration with oedema. These may be followed by Eusol dressings. Many advanced cases yield very rapidly to this kind of treatment.

Some object to the use of acids etc., to cauterise and use sulphur powder to rub on the chancres. It is said that it combines with the toxins and neutralises them facilitating healing. Iodol is also used and camphenol mixture of carbolic acid crystals and camphor in equal parts is also tried with good results.

Constitutional treatment is very important in these cases, as if the body vitality is low, it takes a long time to heal. In mixed cases, commence arsenic *i.e.*, "914" intravenously or sulpharsenol or a course of bismuth.

If, in spite of trying anti-syphilitic treatment also, no improvement is noticed, "Dmelcos" a preparation (vaccine) made from B. Ducrey should be used. The injections are to be given intravenously, the interval varying according to the reaction of the patient. We have used this preparation in many cases of soft chancre with gratifying results. The chancres healed up quickly, the general condition of the patient improved, the buboes that were incised and took a very long time to heal, healed very rapidly. "Dmelcos" even prevented the formation of a suppurating bubo when given in early cases of soft chancre with painful adenitis. The only drawback to the routine use of this preparation in cases of soft chancre is the very high temperature that is caused as a reaction. The temperature mounts to 105°F or more but falls gradually. This makes many patients and even physicians nervous to use this preparation. We have not noticed

any bad effects caused by "Dmelcos". The patient should be warned previously about the high temperature, the bowels emptied in the morning before the injection by a saline purgative and the patient kept in bed with a light diet like milk. If there is high reaction, the interval between the injections must be increased. A course of 4 to 6 injections may be given in very resistant cases.

An auto-vaccine can be made and administered, if possible, especially in case of chancreoidal bubo with secondary infection. If there is phimosis and soft chancre is under the prepuce, circumcision may be performed or preferably dorsal slitting, a simple operation under local anaesthesia. A director is passed under the prepuce and the prepuce divided with a pair of scissors on the dorsum in the middle line. The chancreoid is exposed, cauterised with fuming nitric acid or actual cautery and is dressed frequently with hypertonic saline or Eusol. Cauterisation is not advisable in mixed cases, as it interferes with the finding of the spirochaeta pallida. Eusolar Hypertonic saline dressings only are used in such cases or sulphur powder or dichloromine T. 2.5 to 5% in zinc oxide 95%. The powder should not be allowed to collect in large quantities and dry up into crusts as it interferes with the drainage of the discharges and causes bubo. The patient may be sent to sea side or a health resort if he can afford it, after being almost cured, of course with the usual tonics.

Treatment of Suppurating Bubo:—Many advise incision and packing with gauze. Secondary infection with pyogenic organisms occurs on account of lowering of the vitality of the patient and the tissues by B. Ducrey and the wound being in the groin, a dirty region. The ulcer becomes chronic and takes a long time to heal. We have come across many cases which took months to heal often to the disgust of the patient as well as the doctor. In these cases injections of "Dmelcos" or an autogenous vaccine hastens cure. Arsenic and iron may also be administered. In the beginning only one or a few glands may be affected but after incising and removing them, several others are affected and the process continues especially if the patient is weak and debilitated. This required removal of the affected glands every now and then.

The best method is aspiration and injection. When the bubo becomes soft, the contents are aspirated. A 10 c.c. record syringe with a stout needle is sufficient for the purpose. After removing the pus, Iodoform emulsion is injected into the bubo. This is withdrawn and another fresh quantity of emulsion is injected and the opening or puncture sealed with collodion. Tr. Iodine (1 in

20), collosol iodine, collosol argentum, Iodol or electrargol have also been used for injection. The bubo is aspirated again the next day and another quantity of the emulsion is injected and sealed in. This may be repeated after some days, if it refills. Usually the healing occurs soon.

If this does not succeed, it should be incised and only a very small opening made. The affected glands are removed without rupturing them and the wound dressed with iodoform gauze after which it heals up after some time.

Prevention.—Washing the genitals after exposure with warm water and soap was quite sufficient in a number of people exposed to infection to prevent chaneroid.

However it is safer, to wash with potas permanganasm (1 in 2000) or bin-iodide of mercury lotion (1 in 5000) or hydragy perchloride (1 in 2000), also afterwards.

Unction of calomel cream or ointment 33% might also prevent infection, especially when exposed to mixed infection.

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The Antiseptic

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THE VENEREAL PROBLEM.

THE one great problem—and a grave one too—in the universe, that has baffled the brightest intellects—Scientists, Statesmen and Social workers, and defied all attempts at a satisfactory solution for ages together, is the venereal problem. This problem is as old as the world itself and is of the greatest national and international importance to-day. The origin of venereal diseases is still shrouded in mystery. Perhaps, it may be said with some degree of certainty and reasoning that the venereal diseases were non-existent at the time of our first parents Adam and Eve. With their progeny, however, the tale is different. Instead of roaming about in the garden of Eden, nude and naked, eating its plentiful and delicious products, except, of course, the forbidden fruit and enjoying the sweet balm and blessings of Nature, Adam and Eve and their progeny transgressed her laws and then 'came all our woe'. Shyness and a sense of shame resulted in an attempt to clothe and cover themselves, their covering meant the secrecy of the sex-organs, with secrecy came passion, passion brought on promiscuous intercourse and prostitution and prostitution is the foundation for all kinds of Venereal Diseases. This, in brief, is the evolution of venereal diseases and is universally true. There are several phases of venereal diseases, the worst of which is Syphilis, known as 'the scourge of humanity.' Syphilis is said to be a disease of the New World. Columbus discovered America in 1492 and exploited that continent for gold and other valuable commodities. America wreaked her vengeance by presenting Columbus and his crew,—nay even

his countrymen and continentmen-with a new disease 'hitherto unknown to mortals'. Says Dr. James Kemble, 'there seems to be no doubt that along with gold and the slaves and the parrots, Columbus's crew also brought this disease to Europe. This disease from its first incidence was so devastating in degree and so extensive in distribution that this is in itself strong evidence in support of its being new to Europe. No immunity had been acquired, the wholesale havoc was due to its pristine virulence upon a virgin soil'. But syphilis and civilization are said to be synonymous. Was the new world, then, more civilized at the fag end of the fifteenth century, than the old one, to develop severe syphilis? Is it not a historical fact that the older civilizations of Babylonia, Greece and Rome crumbled to dust as the result of lewdness, licentiousness and luxury? Were not the Europeans of that age, the inheritors of the great Greek and Roman civilizations? These are questions that suggest themselves to us and in attempting to answer them, we are prone to vindicate America and discharge her of her guilt. There are some western savants also who are one with us in this view, but they, while exonerating America, try to foist the blame on the Guinea Coast of Africa. But the accusers of America say that this is improbable in as much as the Portugese traders who had been plying their trade in those regions for generations before had not brought that disease back to Europe. India, with a hoary civilization also disclaims ownership of syphilis. The disease is said to have been acquired from the Portugese at the time when Vasco-de-Gama landed at Calicut. That Spain and Portugal were the world-distributors of Syphilis is thus certain, though, their initial sin as the originators of the disease is disputed.

PROSTITUTION.

At first there was no valid law to regulate sexual intercourse. Like everything else it differed in different tribes. Sexual intercourse appears to have been usually restricted to persons of similar age so that sexual intercourse between parents and their children came to be excluded from the beginning. Of such relations, nothing remains at the present time but a few scattered mythological legends as reminiscences. Of the intercourse between brothers and sisters there only remains isolated traces in a few primitive savage tribes. Even here it was between cousins. In historic times, however, consanguinal union was common in the ancient Egyptian reigning dynasties. With few exceptions, throughout the three centuries that the Ptolemies ruled over Egypt, the

princes all married their own sisters. As time went on inter-unions between tribes came to be effected. The girl of one tribe was given away as a gift or present to another tribe and she became the common property of that latter tribe. Thus prostitution came to be established and it became so menacing and widespread that man's sense of morality and decency in the later stages of his civilized life revolted against this custom and discovered various ways and means to put an end to this abnoxious system, of which, marriage is one. But the prostitute has outlived all the wits and ingenuity of man and to-day is playing considerable havoc among all the nations of the world. Prostitutes are of several types. The street prostitute known by several aliases as the soliciting prostitute, the professional prostitute and so on, is a notorious figure in all parts of the world and can be readily identified by her amorous looks and gait and her open solicitations. She is the virus of all venereal infections and the fountain-head of all venereal diseases. Many have been the laws made to suppress professional prostitution and as Dr. D. C. DeWalt of Houston, observes: "Prostitution as a business or a profession has been so successfully dealt with, that it cannot any longer be considered a serious factor in the social life of the community". The old time prostitute of the street has gone but a new type has taken her place. The form has changed but the substance remains the same. This prostitute goes by the name of the 'clandestine-prostitute'. The following vivid picture of a clandestine prostitute in America at the present day published in the *Texas State Journal of Medicine* (February '30) is worthy of reproduction here:—

"In response to the pressure of public sentiment, the old time house of prostitution gradually gave way to the 'call house'. This latest development found a "madam" and several girls protected within the walls of a modern apartment house living among respectable families and gradually undermining the environmental morale by a slow but inevitable boring-in-process. This new type has evolved during the past decade or two in response to the inexorable law of supply and demand. She is young, pretty and attractive. She bears no resemblance whatever to the miserable broken down, worn-out, prematurely aged hag who eked out a miserable existence soliciting on the streets or from behind green blinds. If you pass her on the street, you would never realize that you are standing face to face with society's greatest tragedy. She passes without even noticing you. Even if you were to make the first advance, she might snub you and possibly call a police-

man. Her conduct is as exemplary as any miss out shopping or walking. She dresses stylishly and is neither more or less lavish in the use of henna, lip stick, rouge and black crayon than her respectable sister. She belongs to no class, race or creed. Any girl of good family or no family whatever may join the ranks. She may be seen on the crowded dance floor in the fashionable hotel and in the street jam going to or from her work. In brief, she is any girl at all who has given way to the solicitation of her 'gentleman friend'.

"In the various stratas of society, conditions are essentially the same, though differing in outward aspects and the poor working girl succumbs to the irresistible inducements of a 'good time' and perhaps a bit of finery. She is not inherently bad or immoral but merely human. The economic conditions under which she manages to live, the squalor of her life, the poverty and sordid existence of her family; the drudgery of the factory and its meagre pay; the high cost of merely living and the easy way to luxury and fine things for which her feminine heart craves, all of these tend to blunt her moral reactions and her resistance is shattered. And waiting round the corner stands the young 'gentleman friend' sexually stimulated and driven to chase by strong instinct and depraved thinking, ready to pounce on his already weakened prey as it appears within easy reach".

The result is "our venereal and gynaecological clinics and our consulting rooms offer indisputable evidence of the widespread dissemination of venereal diseases among those young girls and their partners. And to make matters worse, they are entirely in ignorance of the most simple rules of prophylaxis and personal cleanliness. If our institutions for unmarried mothers were investigated, it would be found that the majority of their unhappy inmates are young girls ranging in ages from 16 to 20. How many abortions are performed on the girls, none can say, but the number would stagger humanity if the full truth were known."

What is true of America is true also of other civilized nations of the world. While the nations of the world are gloating over the suppression of prostitution as a result of widespread venereal propaganda, a new menace is threatening them, that of wide-spread moral looseness and sex stimulation in families and communities which had hitherto remained clean and unscathed, resulting in the wider dissemination of venereal diseases. To add to this, there is the present economic depression which has undone all the good work that has hitherto been done in the direction of

the suppression of venereal diseases. Mulzer states (*Die Medizinische Welt* Sept. 12, 1931) that the world wide depression has brought it about in Germany that a large portion of the population has a tendency to neglect venereal disease and adds "young women confronted with the problem of supporting themselves, find no means of doing so apart from prostitution, and young men out of work become in time practically unemployable. They spend their time in dissipations of all sorts, and lose the energy and ambition necessary to any sort of career. The consequences of this demoralization are the more to be regretted because of the fact that in the years since the war great progress has been made in combating venereal disease. Syphilis seemed to be actually a dying infection and progress was also made in control of soft chancre and gonorrhoea. This was largely the result of an intensive educational campaign during and after the war, but must be attributed also to the fact that we possess such excellent specifics for the control of syphilis. This disease was beginning to be regarded by the laity and even by physicians as no longer to be feared as it no longer occurred. In fact, men became so careless that a slight increase in syphilis was noticed even before the intense economic depression. Now if everything which is gained is not to be lost, it is necessary that the State should remove the economic difficulty which at present prevents men and women from receiving treatment. Surely it would be much cheaper to provide salvarsan and bismuth at the public expense, at least during the infectious stage of syphilis, than it is to provide for the care of paralytic demented during the years which elapse between ultimate dependence and ultimate death. Any nation which invests in the health of its people is making a wise investment and it must be remembered that medicaments, salvarsan, especially are expensive. That portion of the population threatened at the present time cannot pay for them and furthermore an insufficient treatment with salvarsan is worse than none at all. Venereal disease is a danger to the State and should be recognized as such. Everything possible should be done to bring diseased individuals promptly under treatment and while the expense will undoubtedly be great, it should be fully worth all that it could possibly cost".

Now let us examine the state of affairs in India. Prostitution was not unknown to the Ancient Hindus. In fact the Code of Manu abounds with strict injunctions with regard to the commission of adultery and prevention of prostitution. These laws apart, various attempts have been made to reclaim

the prostitutes. The dedication of devadasis to temples is one such attempt. They have been made to do service in temples in return for the support they get from the temple-funds. For the Ancient Hindus knew that after all poverty was the root-cause of prostitution and by diverting the attention of the prostitutes to the service of God and maintaining the prostitutes out of temple-funds, they expected to stamp out prostitution. But as in the case of many Hindu religious ceremonies and customs, the devadasi system has also degenerated and the devadasis have in course of time gone back to evil ways once again and taken up professional prostitution to supplement their temple income. The legislations for suppression of brothels recently enacted in the various Presidencies of India have not improved matters nor has venereal propaganda been of such intensive and extensive nature as to produce any tangible result. The western manners and customs imported to India in recent years have worsened the situation and the moral fabric of the Hindu race is fast getting loosened. Venereal diseases are on the increase. India, surely, is riding for a fall, morally!

PREVENTION OF VENEREAL DISEASES.

There are three principal factors connected with the prevention of Venereal Diseases. They are: (1) Education (2) Propaganda and (3) Legislation. Education, must take the first rank, though at the present day the order is reversed and it occupies only the last place. By education is meant not the secular education that is now imparted in our schools and colleges but moral education, sex-education, and health education. It is no exaggeration when we say that nearly nine-tenths of the human race is in blissful ignorance of the anatomy and physiology of the reproductive organs. Human beings are like brutes, when their acts of procreation are guided and aided by sex impulses and sex instincts. But they are more than brutes when they over-indulge in sex acts, inflicting endless misery not only on themselves but also on all future generations, yet unborn. In the case of brutes sex-instincts and impulses are regulated by nature. An animal of the female sex once impregnated never allows its male mate to approach it again. She kicks and spurns it. But the human male makes overtures on his helpless mate in season and out of season, even during pregnancy, in the false belief that their sex-relationships are based on 'love', while they are really based on women's economic dependence on men. She protests but ultimately yields

with consequences disastrous to both. A sound knowledge of sex hygiene would certainly have saved them from disaster. "If in every home and in every school, sound instruction and advice were given, not only in the laws of healthy living, but also in the wonderful story of transmission of lives from parents to offspring and from one generation to the next, with examples drawn from plant and animal life; if, further, this were imparted in an impersonal manner in a non-emotional atmosphere—then the soil would be prepared. The physiological and psychological knowledge concerning the meaning of the mental and bodily changes which take place at puberty together with advice as to the duties, privileges and responsibilities attached to parenthood and the right living of the sex life could be given without fear of provoking a false mental attitude or of producing a state of emotional shock in the sensitive pupil's mind. But before this can be done on an adequate scale, so as to embrace the child and adolescent population as a whole, parents and school teachers must themselves be taught, not so much the facts of life—these they know or can learn—but rather how to impart some knowledge of these facts and their meaning wisely to children and pupils. Unless the conduct of the young citizen is guided by some knowledge of the meaning of these facts, the sex life of the nation is poisoned at its sources'.

Many countries in Europe are adopting this course now. In Poland, this duty devolves on the school doctor. In the primary schools, he concerns himself principally with the prevention of contagious diseases, with questions of sanitation, nourishment etc. In the secondary schools, where it is a question of growth, of the period when individuality is developing and where deviations from the psychological normal may appear in the pupil, he pays attention to sex-hygiene. In America, attempts have been made to teach sex-hygiene to mixed groups in Colleges or in Normal Schools. In India, as usual there is lethargy. The educational activities of the Government have been summed up by Mr. L. N. Sahu, M.A., member, Servants of India Society, in a paper presented to the World Federation of Education Associations held at Denver in 1931, as follows:—

(1) The Govt. has not followed a very active, sympathetic and correct system of education in this country. It has established schools mostly to secure clerks knowing English for its offices and has never really cared for the better manhood of the country.

2. As a result of this, the government has neither cared to take active non-official help in the matter of education and health

propaganda for the well-being of the students nor has it done so through its own Agency of paid teachers.

3. It has been criminally negligent of the health of the future citizens of this country by failing to do what could have been done for the physical welfare of the students and has thus helped to produce imbeciles and physical wrecks."

While there is no place for even health education in India, much less there is room for sex education and the sooner the Government wakes up to the needs of the hour, the better.

As regards *Venereal propaganda*, very little is being done in this direction in our own country, while the European nations make use of cinemas, talkies, radios and the like to the best advantage. The following extract from the International Review of Educational Cinematography (May '33) gives the nature of the venereal propaganda recently adopted in France:

"The sound films, 'ANTI-VENEREAL METHODS', 'Sufferers from Venereal Disease', by Dr. Rabut (with accompanying lecture), the amusing film, 'the Thousand and Second Night' and the two pathetic pictures, 'There were once three friends' and 'the Kiss that Kills', all formed essential elements of the success of the assemblies.

Large crowds came to listen to explanations on ways and means for preventing venereal disease and organizing a defence against its ravages, fully appreciating the importance of such ideas. These lectures on venereal dangers and the carefully chosen films that accompanied them were certainly widely appreciated both in the cities and in the countryside.

Before the introduction of touring auto-cinemas, the French countryside was scarcely touched by social hygiene propaganda. A few major centres on the main railway lines received occasional visits from lecturers. Now with our groups of motor cars and our cinema apparatus we can reach the most inaccessible villages and the highest mountain districts. We have been able, it may be said, to introduce a thorough campaign.

Our lectures are crowded by adults. The rural population is now beginning to find out the advantages of economic well-being and by means of radio keeps in touch with modern trends and events. Hygiene is, however, for the rural folk something of a novelty, and it is perhaps this very novelty of the subject which has helped to attract the peasants to the lectures in large masses.

Everything connected with vaccines, serums, preventive measures and early symptoms holds their attention at once. The

films on the B. C. G. vaccine, on diphtheria, cancer and syphilis were followed with the closest attention.

The anti-venereal propaganda campaign, which three years ago met with so much opposition from the mayors, has now the general approval of the public.

One of our lecturers reported a case of the gratitude shown him by a young woman, who came to see him two years after his first anti-venereal lecture, to show him a fine healthy child she had been able to save from mortal danger by following a proper medical regime.

It is our intention to proceed with lectures on social hygiene, and where it is possible, to combine them with lectures on agricultural subjects.

If to-day our countryfolk know something about hygiene and how to defend themselves against social diseases, if they insist on having pure water brought to their villages and know how to prevent their cows from contracting tuberculosis, our lecturers are to be congratulated thereon. The peasant ought to realize that a part of his success is due to the use of the cinema, and especially the sound and talking cinema."

Finally, coming to legislation, we have our own doubts as to its effectiveness and utility. We had had some knowledge of the working of the Brothels Act in Madras. One fine morning, after the Act came into force, the Police force entered the brothels and mercilessly drove away such of those prostitutes from the City precincts as could not render a satisfactory account of themselves and their means of subsistence. Those who provided themselves with temporary husbands to maintain them were let off scot free and the rest betook themselves for a jolly drive and a short stay in the suburbs of the City, only to come back to their homes with redoubled vigour, after the sensation ceased. The Brothels Act in Madras has thus become a dead statue. These prostitutes merely scoff at such man-made laws. Instead of the policeman entering the brothels, it would have been much better if the Doctor had been empowered to enter them, to examine the inmates and certify as to their physical fitness to ply their calling. The doctor would surely have been taken into their confidence, he could advise removal of serious cases of Syphilis etc., to the nearest Venereal Clinic, could declare a house infected with a view to prevent customers entering and unawares catching the infection and by a thousand and one ways save both the prostitutes and their paramours from misery and ruin.

As for the clandestine prostitute she is above all laws. The system of marriage now in vogue in Western countries is mainly responsible for this state of affairs. The so-called 'love' marriage with its long-drawn wooing, flirtations and excitements, is responsible for a host of crimes—abortions, suicides, infanticides etc., apart from spreading venereal diseases. The trial marriages, companionate marriages and things of that sort now adopted in America have worse effects. Early marriage, by which we mean consecration of marriage before puberty and consummation thereafter as is now followed in Hindu Society, with all its faults, confers some sort of freedom from Venereal Disease.

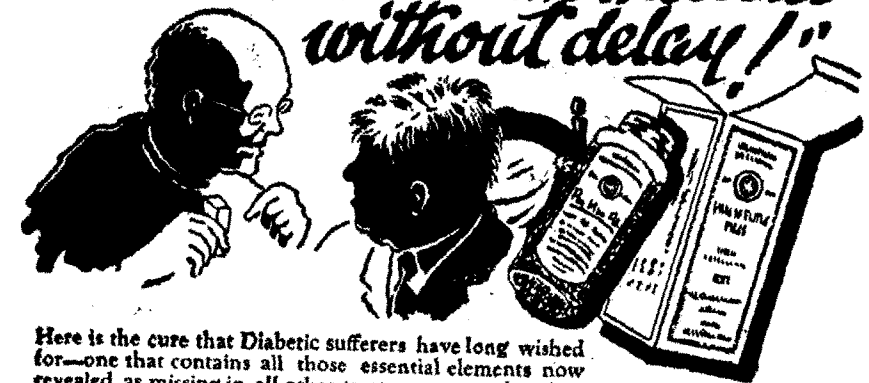
Besides the three preventive measures above enumerated, we would advise other measures, without which, no success can be vouchsafed. In advocating these measures, we may perhaps be considered several centuries behind the times but still we venture to suggest them in the best interest of humanity. They are (1) Plain living and high thinking (2) Strictest continence to be observed by both sexes before and after marriage, especially during periods of pregnancy and lactation and (3) Economic uplift.

These are measures to which no possible exception can be taken, and it behoves every individual therefore to live a life of plain living and high thinking and practise at least moderation in sex acts, if not strictest continence. The economic uplift of a nation is a matter for the respective Governments to deal with. The active and sympathetic co-operation of the individuals, the doctors, and the Government is thus necessary to stamp out venereal diseases. Unless effective steps are taken in time, Venereal Diseases will continue to remain with us always and the Venereal problem will remain for ever an unsolved problem.

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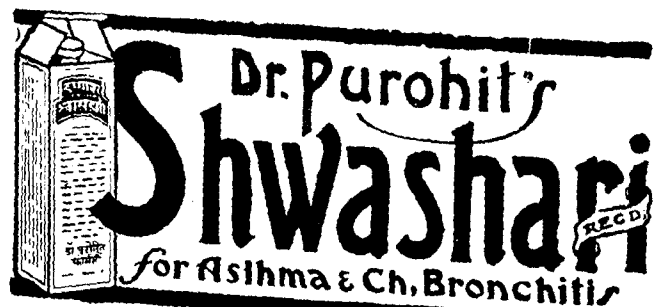
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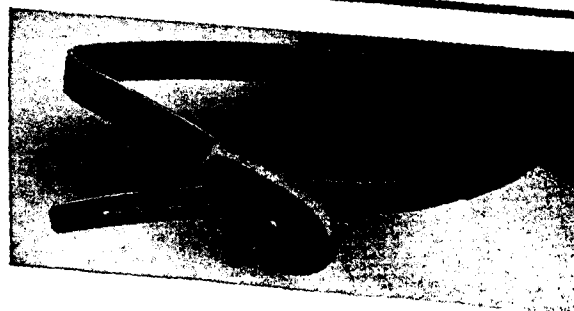
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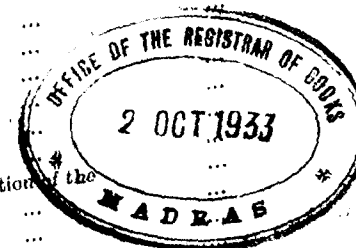
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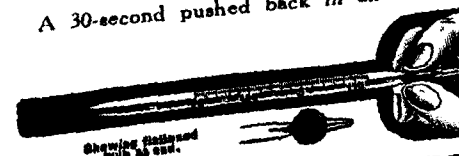
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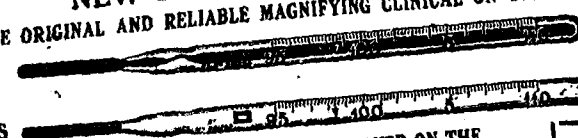


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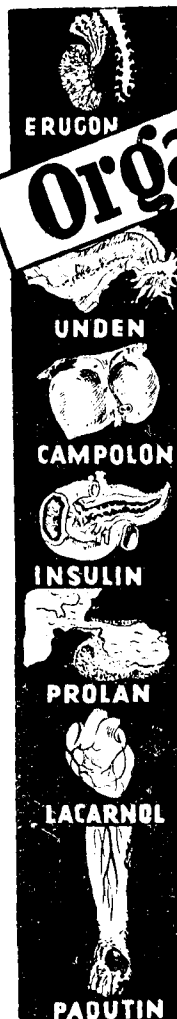
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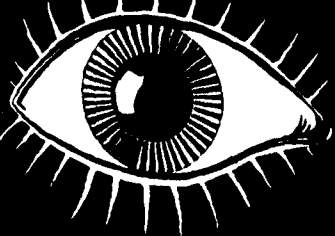
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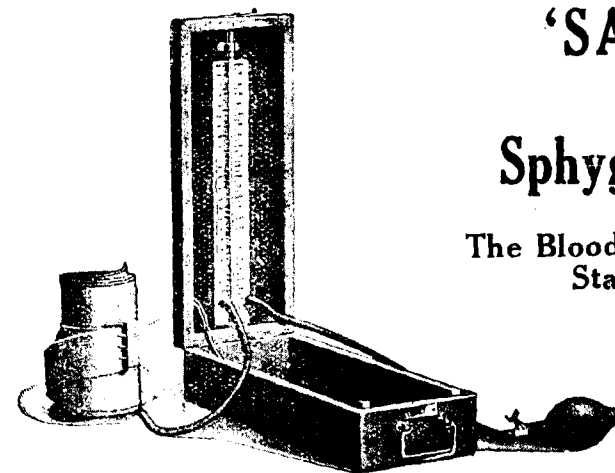
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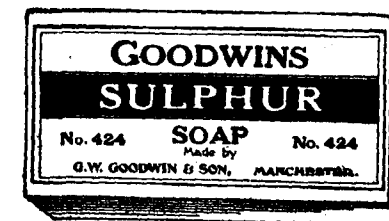
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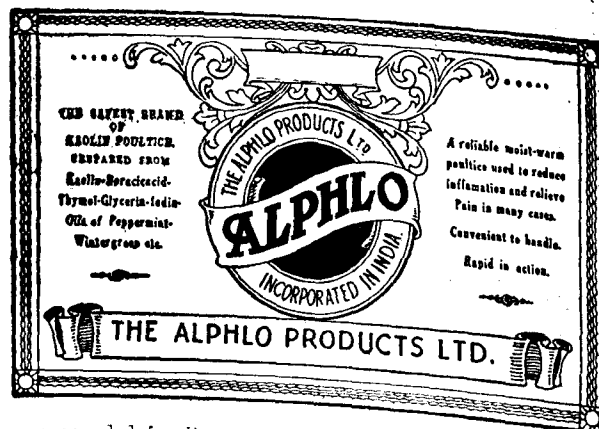
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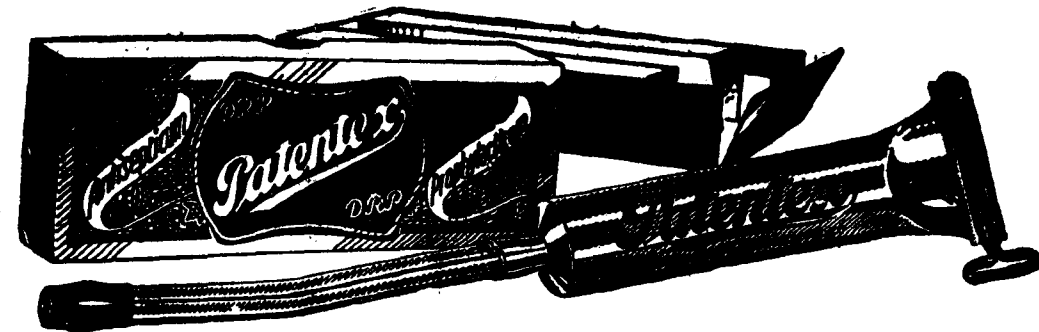
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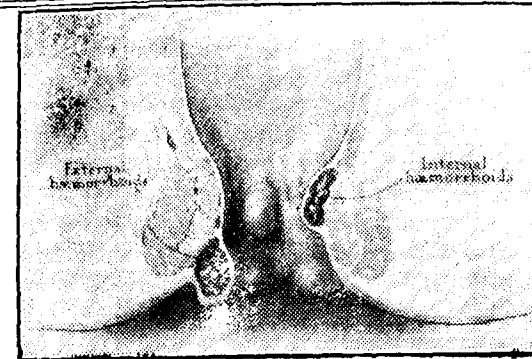
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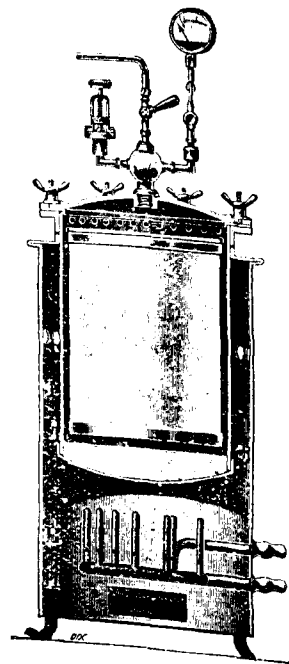
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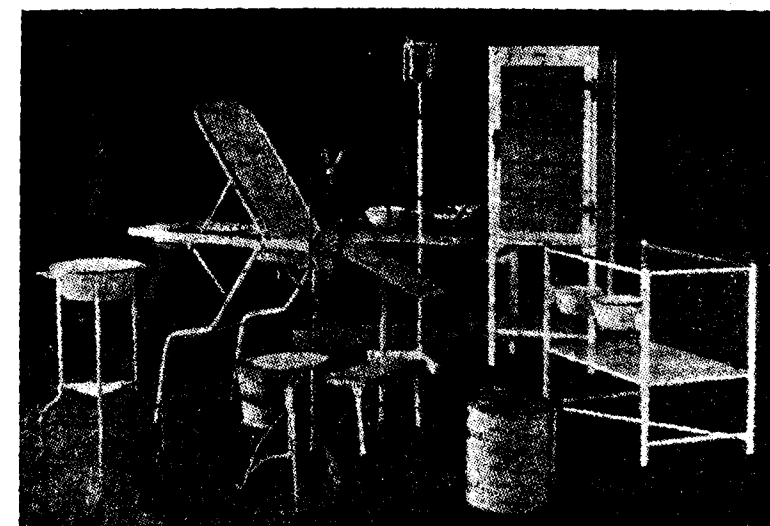
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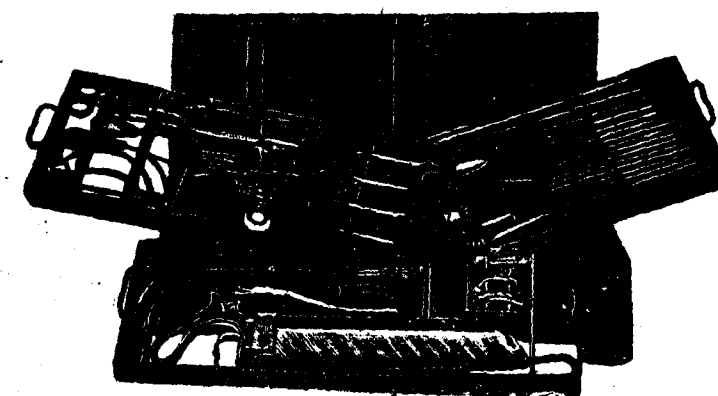
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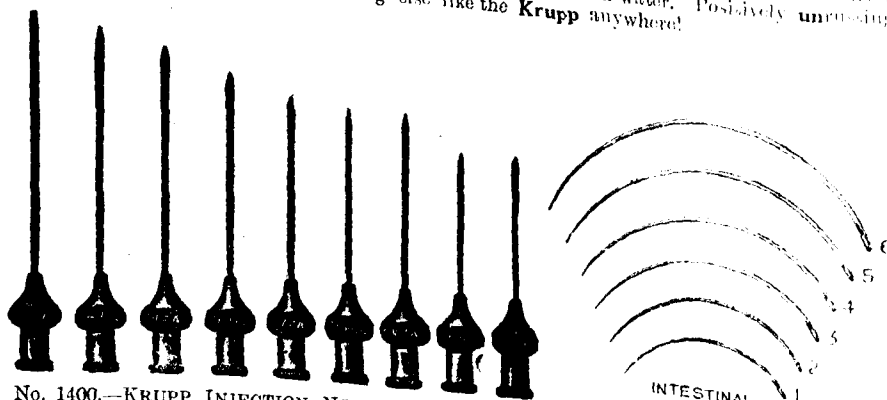
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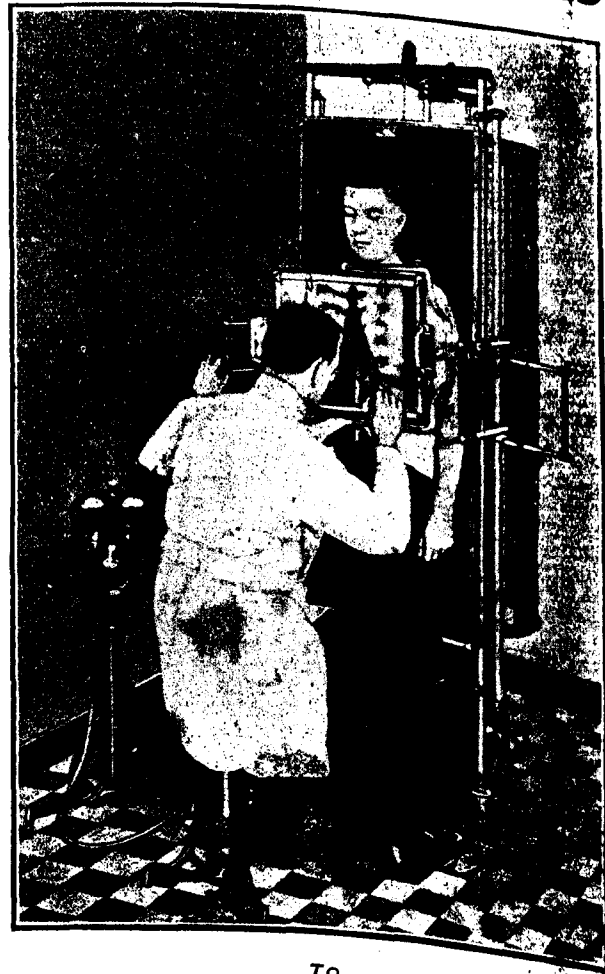
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* KALA-AZAR

BY

M. R. GURUSWAMY MUDALIAR, B.A., M.D.,

1st Physician, Govt. General Hospital

and Professor of Medicine, Medical College, Madras.

I AM sure all of you are conversant with the parasite of Kala-Azar.

So far as Leishmaniasis is concerned, there have been discovered 4 different types in different sorts of lesions. The one we are concerned to-day, is the type which is known as the Leishman-Donovan parasite for which Madras General Hospital takes the credit as being the first to find the parasite. It was Donovan that discovered the parasite, and I need not go into the history because it will take a long time. Suffice it to say that so far as K. A. is concerned, Madras has taken a leading part in the investigation.

The disease occurs sporadically and it is rarely an epidemic disease. In many places it has been found as an endemic. Madras is one of the endemic areas. Usually it has been found that the disease is one confined to rural tracts, rarely found in large cities to the same extent as in villages. But Madras City is peculiar in having the largest amount of incidence of K. A.

The conditions incident to the spread of the disease are the domestic conditions; by which I mean it is a disease which apparently goes in certain families. It is not unusual for us in the Hospital to enquire into the history; and if a person comes with a long continuous fever and says there has been a brother or

* A lecture delivered under the auspices of the Madras University Extension Board,

sister or some other relative who suffered from K. A. some years previously, we immediately make a short cut and suspect that the condition must be one of K. A. Cases coming from Royapuram, as soon as we hear the name of the individual, we try and hunt up in our records, whether the same name has occurred at any time previously, and some one or other of the doctors in the Hospital remembers persons of the same name having been admitted. So what is admitted as possibly a case of pneumonia, may turn out to be a case of K. A. Sometimes it may be admitted as Enteric and it turns out to be K. A. At the same time it is not so very contagious from person to person that we may say that it infects brothers or sisters, or husband and wife, though there may be close contact with these. Sometimes it has been found that the husband has been affected in one year and 2 or 3 years later the wife is affected. So that, whether the disease is clinging to the families or to houses, is somewhat doubtful. Possibly, it is much better to say that it is a house infection, and really it sticks to houses. In Assam, in the tea plantations, they tried the experiment of burning up the whole huts infected with K. A. This was done in the beginning before they knew much of the disease. They used to build fresh huts on the same sites, probably on the same walls left, they put up a fresh thatch, and people used to occupy these huts and used to get the infection again. That sort of attempt at eradicating the disease must be taken to be an experiment on a large scale, to see whether insects had anything to do with the carrying of the infection—whether a bed bug could have been or could be a transmitter. But this Assam experiment, or I would say, experience, would make one doubt whether bed bugs have ever been transmitters of K. A. as when the houses were burnt, the bugs could not have survived.

Age Incidence.—All ages are susceptible to K. A.—children, adults and old people. One fact that I have noticed in Madras during the last few years is that children are getting infected in large numbers. When in K. A. the fever starts, with the type of fever which we attribute to typhoid then we may suspect that there is possibly an epidemicity starting. The year 1921 was one such year. Until then the previous records that I have got show that the disease was going down. During that year I had a large number of cases coming in. Some of the cases that came in were taken to be enteric and later we discovered the mistake. We find in succeeding years the cases coming to hospital were numerous and later on the type of cases fell down, showing that during

epidemics the children showed a greater amount of incidence than during non-epidemic seasons.

So far as *sex* is concerned, the proportion seems to be in Madras about the same number of males and females. In Calcutta incidence among males seems to be more numerous than in females. In the Tea plantations of Assam, Rogers found no difference in the sex incidence. In Italy women preponderate over men.

So far as *race* is concerned, all races are susceptible.

Seasonal Incidence.—In Calcutta, June is the worst month. In Madras the highest number of cases occur during January, February and March, and the next highest seems to occur in May. So far as admissions into Hospital are concerned, the highest number occurs in March, the next highest incidence is in September. If one might guess what is behind, we find that February and March are about the time when we have the optimum temperature so far as Madras is concerned, and apparently that is about the time when K. A. parasites or whatever may be vector, seem to flourish best. Apparently it has got to do something with humidity. Humidity between 50 and 60% is said to be the best time for the transmission of the infection. So the student who is searching for the vector will have to concentrate on the insects which best thrive with a humidity between 50 and 60%. One does not know why it is sticking to Madras, while places close by are free from K. A. For a long time, it was thought that a slight rise of altitude was enough to prevent K. A. infection. Some of my colleagues at Bangalore were under the impression that they had no K. A. at all there, till one case which was treated as chronic malaria for a very long time and which was sent over here, turned out to be a case of K. A. At one time it was thought more than 2,000 feet above the sea level was enough to prevent K. A. It is now found that upto 6,000 feet we are not safe. Above 6,000 feet K. A. has not been traced. In Madras K. A. seems to stick to places which are low lying, damp and close to stagnant pools of water or running water. Although some years ago, it was confined to certain localities such as Old Washermanpet and Royapuram, it has now spread to almost all the parts of the City on the northern side of the Cooum, and you find now that George Town, Mannady, Choolai, Chindadripet and Egmore have all been infected.

There is one peculiarity about its spread—it is very slow. The epidemic seems to spread very very slowly. In areas like

Burdwan and Assam and other places where they have worked out large areas which were infected, they have found that the area of encroachment is at the rate of 10 miles every year. That is a magnificent march! but on the way everything is devastated. And as I have already told you, it sticks to houses, so that we in the hospital can say which are the houses in some parts of the city which are infected, and if patients come from those houses, we at once suspect K. A.

What are the vectors responsible for the spread of the disease? Various theories have been put forward, and each observer has met with some theory or other which has not been substantiated later. One of the theories has been that it is an infection conveyed from man to man. But as I have already told you, it is not possible to substantiate this theory. Another theory is that it is due to the blood sucking insects, and about this theory, a lot of experiments have been carried out, and again Madras has been the first to investigate the source of infection blood, and Donovan was almost the first person to suspect blood sucking insects, and he being a modest man, Paton used to publish some of his ideas. It would not be proper for me if I did not mention what was done by Donovan as I must give credit to my old teacher and master. But Paton improved upon it. Donovan had tried the bed bug and found that it was not a carrier. But Paton was rather in a hurry to publish results, and so he published that he had found the bed bug a true medium of transmission, and even a few years ago, this theory was believed in. It was not until another Madrasian—this time Swaminathan—proved definitely that the bed bug was not a criminal in this affair, that it was taken away from the list of accused. Another of the ideas that Donovan had was the pediculus Hominis. One which he long experimented with was the Conorhynchus. He used to feed them on patients, make them breed, but after numerous experiments, he gave it up and in the end he came to no conclusion. Are we any better now? We too have come to no conclusion still.

Sand-fly was one of the latest accused, but the K.A. Commission could not convict it. Napier was another of the investigators, and he was of opinion that people who had chicken and ducks in their houses are liable to catch the infection, but if he had worked at Madras, he could have found that vegetarians who do not think or dream of keeping ducks or chicken, suffer from K. A.; and I do not think his opinion is valid.

A number of other experiments on dogs and other animals

were done, and under the direction of Donovan about 400 dogs were dissected by Dr. Ganapathi Iyer, and he could only find one dog which showed the L. D. or something which morphologically appeared to be L.D. Dogs, monkeys, jackals, etc. have been inoculated in India successfully. Outside India, guineapigs, rabbits and flying foxes have been inoculated successfully. Of these they have found that hempsters are the most susceptible to the disease and therefore the best media. Dogs and monkeys come next, next come foxes, rats, guineapigs and last rabbits.

Symptomatology:—K. A. is so well known that there is not much to speak about the symptoms.

Some people have thought that the incubation period was only 10 days. Others have thought it was 6 weeks, and one of the people who put the incubation period into the longest period was the present Surgeon-General Sprawson. He noted the incubation period was 2 years. And if we take the Assam workers' experience it is somewhere about 6 weeks. The onset I told you is in some cases, something like typhoid. In other cases it is of the malarial type. In other cases irregular fever now and then. The insidious type is very often mistaken for Tuberculosis. You will find that there is some reason for mistaking these cases for tuberculosis. Patient comes to you quite emaciated. There is a certain amount of loss of hair; there is great loss of weight. He has got loose bowels and very often he has got a hacking cough. This hacking cough is said by the Pathologist to be due to enlarging spleen; and some of the students will wonder how does the enlarging spleen give rise to the hacking cough? It is thought to have something to do with the vagus and the vagus irritation is said to cause the hacking cough. So with the hacking cough, with an enlarging spleen, with an irregular fever, with great emaciation, with a certain amount of diarrhoea, it is no wonder if the case is mistaken for incipient tuberculosis, specially with intestinal complications. Then there is another type, a type with unknown beginnings where the person does not complain of fever. He comes for something or other, a diarrhoea or dysentery, and you find an enlarged spleen, and sometimes you find K. A. bodies in such persons with absolutely no history of fever, and these are cases which we cannot put down as having definite beginnings.

It is essential whenever we get fever of continuous type to ask the patients to keep a temperature chart, marked if possible, every two hours. And if you get what is known as the triple rise or more often the double rise of temperature, then you are

lucky in your diagnosis. Napier thinks it is not always found; and in my own personal experience in the General Hospital with some 400 cases a year, it is not always found; but when found, it is always characteristic. The double rise is suggestive of K. A.; the triple rise, I have not found, in any other condition except in K.A. The double rise I have found often enough in Malignant Tertian and more often in K. A. But if there is a triple rise, there is no doubt about K. A. So that the temperature chart, if it is marked out every 2 or 4 hours, is likely to be of very great help in suggesting the diagnosis.

Among symptoms, loss of weight, is one of the prominent things. The dark skin is suggestive no doubt, and if a person comes with a dark skin and a large spleen and an enlarged liver, you are justified in suspecting the case to be one of K. A. But these conditions are also found in other cases, such as, heart trouble, malaria, and other conditions, where also you may find enlargement of liver and spleen. But there is a point in the enlarged liver which is peculiar to K. A. as against heart trouble or malaria; and that is the *sharpness of the border*. The malarial liver has not got that sharp border that the K. A. liver has; so that the enlarged liver with a very sharp margin is suggestive, very strongly suggestive, of K. A. specially when it is associated with an enlarged spleen. A spleen enlarged in proportion to the duration of the fever is very suggestive of K. A. If the spleen has enlarged to the level of 2 fingers below the costal margin, it means 4 months; between costal margin and umbilicus, it means 5 months; to umbilicus it means 6 months; so that there is a certain rate of enlargement in all cases of K. A. When with an enlargement of spleen and liver, we find shortness of breath, a certain amount of anæmia, bleeding from the gums, a very good appetite, a very clean tongue, and the patient unable to perceive the temperature even when the temperature is 103°, we know we are dealing with a case of Kala-Azar. A painful spleen is also characteristic of K. A. But in my experience, only 3 or 4% show this characteristic. Tenderness of the spleen is another symptom. The patient suddenly complains of pain all over the spleen and 3 or 4 days later, it is confined to one spot. An infraction of the spleen has occurred and the infraction of the spleen is due to the K. A. parasites having invaded the endothelium and the pain suddenly starting, and then settling down to a particular spot, and when we localise it, we find the spot of tenderness.

Nervous symptoms.—Some authors are of opinion that there are no mental symptoms at all in cases of K. A. If they mention any, they mention only Herpes, but in those cases, I think it is due to the Tartar Emetic treatment.

In children there is another valuable aid to diagnosing. Just as the liver may be a good tip in cases of adults, in children the bone is a good tip. There is a tenderness about the shin bones (about the tibia). There is also a certain amount of tenderness, and pitting on the shin. If you get a pitting and tenderness, of course you usually think of osteomyelitis, or some such thing, but in these cases it is simply due to the extreme congestion that has been produced in the periosteum and the skin and subcutaneous tissues show peculiar changes.

In women especially, a point that you might remember is amenorrhœa. It is an early sign in cases of K. A.

Complications.—You know the usual complications respiratory, such as pleurisy, bronchitis, pneumonia, etc. Of the alimentary complications, chief are put down as cancrum oris, diarrhœas and dysenteries.

Among the sequelæ, the most important is the Dermal Leishmaniasis of Brahmachari. The first report of such a case was made in 1919 by Brahmachari. What he observed was some white patches on the skin of the person who had been treated with the usual antimony treatment. Brahmachari has got certain views on the basis of finding L. D. bodies in the cutaneous tissues of K. A. patients. He thinks that the parasite has been destroyed from the viscera; so that visceral Leishmaniasis is no longer there, but the parasites could still be found in the skin, giving rise to this form of Dermal Leishmaniasis. While the visceral Leishmaniasis is treated with antimony, Dermal Leishmaniasis defies treatment, and is often mistaken for leprosy. Diagnosis is usually made by a blood examination. If you find a definite leucopœnia, with a great amount of mono-nuclear increase, and with certain changes in the polymorpho nuclears, (the changes occurring being known as budding and banding of the polymorpho nuclei,) you may suspect K. A. It was in that way that Donovan and his students were able to find in approximately 93% of cases K.A. parasites in the peripheral blood, though other workers in other areas think that it is a waste of time to look for these parasites in the blood, while it is so easy to put a needle into the spleen and take a smear and satisfy yourself in a few minutes. Smears may be helpful and when smears are not likely to be helpful, you may

try some of the biochemical methods of serological tests. The serological test that Brahmachari introduced was known as the globuline precipitation test. This test is not of much value. In 1924, I had some mishaps with liver puncture and after that I gave up liver puncture. The proportion of R. B. C. to W. B. C. is in K. A. cases as follows :—

R. B. C.	:	W. B. C.	::	1000 or 2000	:	1
the normal being		do	::	500 or 600	:	1.

The Aldehyde test is the one which we commonly do in the ward, where the serum coagulates within 5 minutes. If to 1 c.c. of serum you add a drop of formaldehyde, you notice it rapidly gets opaque and sets. When it turns opaque, you treat the test as positive. But there is a drawback about this test. This test is negative for 2½ months after the fever has started. It is doubtful from 2½ months to 5 months; and it is positive after 5 months; so that unfortunately if the patient comes to you 10 or 15 days after the starting of the fever, this test is no good at all. The proper method would be to go by the process of elimination.

Treatment.—1913 was the first year in which a successful attempt was made to treat Leishmaniasis with Tartar Emetic. Rogers tried it in India for K. A. in 1915. The drug then used was Pot. Antimony Tartrate. That was the drug we used in General Hospital. Sod. Antimony tartrate was less toxic than Pot. Antimony tartrate, but the results were about the same. But it went out of fashion deservedly, because of vomiting, diarrhoea, wake of Sod. or Pot. antimony tartrate injections. To avoid these complications, it was found necessary to find some other drug; and it was found that pentavalent preparations were much better. They came in as a substitute. The first in the field to introduce it was Brahmachary. He put his urea stibamine and we are still using urea stibamine. Amino-stiburia is equally good, and it was at one time suggested that this should replace urea stibamine in the General Hospital, but it was given up owing to the cost being a little higher. The last of the list is Von Haden 471. The advantage of this is that it can be kept in stoppered bottles for as long as two years in the tropics without getting altered, whereas urea stibamine cannot be opened and left for a few hours without changing.

The dosage of urea stibamine and other drugs is well known to you all and I need not go into that.

The effect of treatment will be seen by the fever coming down, in the increasing body weight, and in the spleen going rapidly and the liver going down slowly. The enlargement of liver persists even after treatment has been stopped.

The evidence of a cure can be taken only after 7 months. If there is no recurrence of the symptoms after 6 months, we take it that the condition has been cured. If the Gel test is negative, we also take it that the treatment has been successful. Intensive treatment of K. A. with urea stibamine has made for economy. The treatment lasts only 10 days. Though urine shows traces of antimony, no untoward effects have been observed so far.

* THE TREATMENT OF TOXAEMIA OF PREGNANCY

BY

N. C. APPAYYA, L.R.C.P., M.R.C.S.,

M.R.C.P.I., L.M., D.G.O.,

Pallathur.

TOXÆMIA is a term, which is very largely used, though very little is known about the conditions it represents. It only means that the blood of a pregnant woman contains small toxins or poisons, which are circulated in the system. But exactly what these poisons are, nobody so far has been able to discover definitely. Like anything else there are theories, and there are people, who dogmatically pursue one line of thought or the other, but this much is certain; that as a result of pregnancy there are pathological changes taking place, chiefly in the liver, kidneys, thyroid and perhaps the other ductless glands. These poisons, seem to have a special affinity over the nerves of the organs of special senses for the brain and its neuclii, for the liver, kidneys and other organs. We all know that during pregnancy, the body retains an excess of nitrogen and also water; but why these things should occur, nobody has been able to discover.

Two groups of symptoms may be distinguished: (1) The mild. (2) The severe type. There are various transitional forms which are common and could be treated symptomatically. Therefore I do not propose going into details about them. But I would like to concentrate on the graver toxicosis of pregnancy and its treatment.

*A paper read before the Chettinad Medical Association in February 1933 last and specially sent to the Antiseptic for publication.

We shall therefore consider the following groups:

1. Hyperemesis gravis gravidarum.
2. Acute yellow atrophy of the liver.
3. Albuminuria complicating pregnancy.
4. Pre-eclamptic toxemia and eclampsia.
5. Accidental hæmorrhage.

Hyperemesis usually begins in the second month, rarely in the fourth, but may appear in the sixth month though very seldom. It lasts from 6 weeks to 3 months but may be so violent as to cause death in 2 weeks. Fortunately for us hyperemesis is rare in India and very rare or unknown among the poor classes. On being called to a case of pernicious vomiting, the patient should be immediately put to bed, and if possible should be removed from her home to a hospital or a nursing home. On admission, she should be examined with speculum, and if the uterus is retroverted, it should be replaced and a well fitting pessary inserted. If there is an ulceration of the cervix, the ulcer should be treated by the application of a 10% solution of silver nitrate. Her diet must be corrected and bowels cleared by means of an enema. In case she rejects all the food that is given, she should be quickly brought under the influence of bromide, dram one being given per rectum, in 4 ℥ of milk every four hours from 8 to 10 doses if necessary. After this, the lost fluid must be replaced, either by the mouth or by intravenous or subcutaneous salines mixed with glucose. When she ceases to vomit any more, feeding should be gradually increased until she takes her normal diet.

The Treatment of Acute Yellow Atrophy is very unsatisfactory. It is a fatal disease which comes on, either after pernicious vomiting or eclampsia. I do not believe that acute yellow atrophy is a separate disease from that of pernicious vomiting or eclampsia. Many obstetricians in the West, suggest that the uterus should be immediately emptied without any loss of time irrespective of the period of gestation. Joseph delee and Whitridge Williams of America do not agree with these people, as their results have been very disappointing.

Albuminuria complicating Pregnancy may be divided into 2 classes. (1) Albuminuria as the result of chronic nephritis. (2) Albuminuria caused by the presence of the foetus in an otherwise healthy woman. Fortunately for us, there is very little difference in the treatment of these 2 conditions for the reason, that it is often difficult or impossible to classify them separately, unless one knows, that a woman suffering from chronic nephritis has become

pregnant. In such cases, if the conservative treatment of rest in bed, restrictions of diet which is protein and salt free, and drugs, fail to improve her general condition, there is no doubt at all, that induction must be undertaken, irrespective of the period of gestation. Some people hold, that in all such cases, induction should be immediately undertaken without resort to the conservative treatment.

In a case of Albuminuria as a result of pregnancy, the first thing in the way of treatment lies, in keeping the patient in bed, clearing the bowels thoroughly by means of purgatives and enema, and allowing only barley water mixed with glucose—2 to 3 pints being allowed with about 10 ℥ of glucose per day. In the majority of cases, if the patient is treated in this manner she will rapidly improve in a few weeks time. In considering this treatment, it is essential to record the blood pressure of every patient, and also the quantity of urine that is passed in 24 hours. If this treatment is rigidly followed, there is no doubt, that the blood pressure will come down to normal and the output of urine will increase. Albumin in the urine will be considerably reduced, though it will not totally disappear until the end of pregnancy. So it is essential, that once a pregnant woman is discovered to have albumin in her urine, this treatment should be continued to the end of pregnancy with a gradual increase of her diet.

Now I come to the most important subject of eclampsia, the dreaded disease, which we encounter so often in these parts, especially amongst the idle rich. Frequently, we are called in for the first time to see a woman who is nearing full time, suffering from fits. The patient when first seen is often swollen from head to foot, with pale lips, perhaps her tongue bitten and bleeding from the mouth.

In the treatment of such a patient, I would like to put before you, the 2 different types of treatment that are being followed.

1. The Radical School.
2. The Conservative School.
 - (a) The Rotunda Method.
 - (b) The Stroganoff Treatment.

The radical treatment is practised even to-day in some parts of England and in several parts of America. This treatment consists in the termination of pregnancy in an eclamptic patient, irrespective of the period of gestation. If the patient gets fits, before the child is viable, these Surgeons empty the uterus by

rupturing the membranes and rapidly dilating the cervix, (accouche-ment force) and delivering the fetus by version. In cases, where the fetus is viable, i. e., when the period of gestation is over 32 weeks, caesarean section is resorted to, in order to have a live child. Obstetricians who follow the radical school believe, that the cause of eclampsia is due, to the presence of the fetus and the placenta. But, unfortunately, the results of this method have been exceedingly disappointing, except in the hands of eminent surgeons. Even most of those who followed this treatment about a decade ago, have begun to doubt the necessity for such an operation, and they are being slowly converted to the Conserva-tive School.

In respect of the Medical or the Conservative treatment of eclampsia, our leaders are Hastings Tweedy, an ex-master of the Rotunda Hospital and Professor Stroganoff of New York. Tweedy, or the Rotunda method, as it is popularly known, con-sists in the elimination of all toxins from the body by giving large doses of mag. sulph. by mouth, washing the stomach and bowels, and keeping the patient quiet by means of repeated doses of morphia if necessary. At the Rotunda Hospital, immediately a patient is admitted into the Eclamptic Ward, she is given $\frac{1}{4}$ to $\frac{1}{2}$ a grain of morphia with a $\frac{1}{16}$ th grain of atropine sulphate and kept in a darkened room. 15 minutes after the administra-tion of morphia, a stomach tube is carefully introduced and the contents of the stomach are completely washed out, and 23 of castor oil are introduced into stomach through the tube.

Then the bowels are washed by means of large quantities of soap and water enema, the enema rubber tubing being passed up the rectum and up the colon for not less than 12 inches. All food is withheld for a period of 24 to 48 hours—milk being strictly prohibited, for Tweedy believes that milk acts as a poison in an eclamptic woman. If the patient is conscious, large quantities of alba mixture are given by the mouth. I have known more than 40 3 of alba mixture being given to a patient within a period of 24 hours with very good result. By following this method, the Rotunda Hospital has reduced the maternal mortality to a great extent. Gibbon Fitz Gibbon who was master at the Rotunda Hos-pital from 1918—25 followed the same treatment as that of Tweedy and his successor Jellet, but Fitz Gibbon did not believe in giving large doses of morphia.

Although I am a student of Fitz Gibbon, I have been follow-ing Prof. Stroganoff's method for the last 5 years. Before I dis-

cuss with you in detail of his treatment, I would like to impress on you, that a successful treatment of eclampsia, entirely depends upon following the minutest details, described by either Tweedy or Stroganoff. I am glad to tell you that by following Prof. Stroganoff's method, I have been able to get very good results. In a place, where there is so much of prejudice against men Doctors attending on pregnant and parturient women, I consider, that the Stroganoff method is much easier than that of the Rotunda School. In my practice, I have often been called to see an eclamptic woman who has had several fits before my arrival. Invariably, the application of Stroganoff's method, has not only stopped the fits altogether, but so far I have not lost a single mother—Touch Wood. *The following is the prophylactic method of Stroganoff*:

1. **Removal of all possible irritations.**—The patient is placed in a separate room, darkened as much as possible, and all noise reduced to a minimum. Both external and internal examinations are avoided as far as possible and every manipulation is carried out under light chloroform anæsthesia.
- 12 NOON 2. **The introduction of Narcotics.** As soon as the patient is seen by you, a $\frac{1}{4}$ to $\frac{1}{2}$ a grain of morphia is given subcutaneously according to the general condition of the patient.
- 1 P. M. In one hour's time, after the beginning of the treatment, 32 grs. of chloral hydrate is given by the mouth, with 4 3 of milk. In an un-conscious patient, the same quantity of chloral hydrate is given with 3 3 of milk and saline solution, per rectum under light chloroform anæsthesia.
- 3 P. M. In 3 hour's time, after the beginning of the treatment a $\frac{1}{4}$ grain of morphia is injected under light chloroform anæsthesia.
- 7 P. M. In 7 hour's after the beginning of the treatment, 32 grs. of chloral hydrate as previously.
1. A. M. In 13 hour's time after the beginning of the treatment, 24 grains of chloral hydrate is given without chloroform anæsthesia, if no fits have occurred during the last 8 to 10 hours.
- 9 A. M. In 24 hrs. after the beginning of the treatment, again 24 grains of chloral hydrate are given without chloroform anæsthesia.

Thus Prof. Stroganoff introduces 112 grains of chloral hydrate

and $\frac{1}{2}$ to $\frac{3}{4}$ grs. of morphia, within the first 24 hours of the beginning of the treatment. This method has to be followed in all cases of ante and intrapartum eclampsia of average severity. Post Partum eclampsia is less severe, and the whole line of treatment is not necessary to be followed.

Venesection is indicated in all cases where the patient has had several fits before admission, and if the fits recur after 3 or 4 hours after the commencement of the prophylactic method, 10 to 12 $\frac{3}{4}$ of blood is removed, and the results have been entirely satisfactory.

The above-mentioned line of treatment is only a guide and variations in the quantity and the interval of administration of drugs should be altered according to the general condition of the particular patient. The essential principle of Stroganoff's method is based, according to him as follows: "The fits are to be interrupted, and if they recur, narcotics must be introduced in larger doses and even more frequently, while in the intervals between the application of the essential narcotics, chloroform narcosis should be more freely administered."

I was never called upon to give the whole treatment except in one case in which the patient had 4 fits before my arrival and no more occurred for 12 hours after this treatment was begun. Unfortunately, after 12 hours the patient was quite conscious and delivered a still born child. This mother who was anxious to have a live baby, immediately on coming to know that the child was still born, wept bitterly, with the result that she had a very severe fit before chloroform could be given, and subsequently she had 3 more fits, before she was brought completely under deep narcosis. After that the patient had no more fits and she made an un-interrupted recovery. This typical case suggests that eclamptic fits are more often the result of a nervous phenomena, than that of the influence of pure toxins themselves. You all know, that in treating a case of eclampsia by the Stroganoff method, we are introducing 2 dangerous poisons into the system of a woman who has been already seriously poisoned by means of some unknown toxin. I would therefore, request all of you, who would like to follow Stroganoff's method to use caution, every time and before administering any of the drugs, a systematic examination of the patient should be done at every step. Friends, don't be under the impression that I am trying to frighten you. I am just telling you that there are many dangers which can be warded off, if care is taken. Apart from this special treatment, the general condition

of the patient should not be neglected. I think I have said enough and more and I would recommend those of you, who are interested in the treatment of eclampsia to study the English edition of Prof. Stroganoff's book on Eclampsia.

I have purposely omitted the treatment of accidental hæmorrhage, for the simple reason that it is very rare in our parts.

Before I sit down, I cannot let this opportunity pass, without mentioning one of the latest theories that has been put forward by Mr. G. W. Theobald, at one time Assistant Master of the Rotunda Hospital and a visiting Professor at the University of Bangkok. Dr. Theobald who has travelled widely and done extensive research work, is of opinion, that toxæmias of pregnancy are not caused by any toxin, that is formed by the placenta or the foetus, but by the toxins absorbed from the bowels and the breakdown of normal defensive mechanism.

* NON-SPECIFIC PROTEIN THERAPY

BY

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PROTEIN was introduced in medicine long ago but it is only recently the non-specific protein is being used as a therapeutic agent in wide scale by the general practitioners and specially the gynæcologists. The excellent results achieved by many practitioners by the injection of a non-specific protein, such as milk in many obscure conditions resistant to all sorts of medical treatment which often call for surgical interference, often tempts one to advocate a more liberal use of the remedy than has hitherto been done.

Non-specific protein in the form of milk when injected into the body exhibits certain actions upon the system and therefrom the therapeutic effect is achieved. Hollar, Weiss and Hibbert have shown that injection of foreign protein brings up a stimulating reaction on the functions of the hæmopoietic system. The phagocytes are also increased and there is an enhanced output of active antibodies in the blood stream. Besides, it has been shown by Hobauer that the female generative organs are surrounded by special types of cells called the monocytes and the clasmotocytes which abound in and around the cervix, the broad ligaments and

* Specially contributed to the Antiseptic.

other parametrial tissues. These cells function as protective mechanisms against any form of sepsis. They devour any septic organism that may traverse along and have power to arrest the process of inflammation. These cells are multiplied in enormous numbers during pregnancy and are stimulated to activity, it is thought, by some protein substance, derived either from placenta or some embryonic or maternal parts. Milk, when injected is said to stimulate the multiplication of these plasmatocytic and monocytic cells and thereby enhance the defensive power of the body.

The injection of milk has been used in all sorts of chronic inflammatory conditions and is being extensively used in gynaecological practice now a days. Lt-Colonel Green-Armytage and his collaborators (1930, 1930a) have used it extensively in the Eden Hospital, Calcutta and they are of opinion that it is very effective in many gynaecological conditions and often obviates the necessity of surgical procedures if they are not imperative. They summarise the indications under the following heads:—

- "1. The fixed, tender and enlarged displaced uterus.
- "2. Tender and enlarged tubes and ovaries accompanied by low fever.
- "3. Thickened and tender uterosacral ligaments.
- "4. Tenderness and thickening at the base of bladder.
- "5. Parametrial exudate."

Practitioners are well aware how these and the allied conditions arising as sequelae to infection by gonococci and other septic organisms are met with daily and how resistant they stand against treatment by douche, immunogens and vaccines and if such a remedy as milk is ready at hand which is both cheap and effective, it will much help both the physician and the patient. Even if the operation is thought feasible, it is better to try a course of milk and if it cannot ward off the necessity of operative measure, it is certain to influence the prognosis favourably. It is very effective after any sort of septic operation because of its stimulating action on phagocytes. Intractable cases of leucorrhœa have been seen to improve rapidly under its treatment.

The next group of cases which readily respond to protein therapy are those suffering from arthritis and synovitis. Arthritis of any origin, specially those which tend towards chronicity are much benefitted by injection of milk. Any condition which arises as a complication of gonococcal infection improves steadily

under protein therapy, and in treating gonorrhœal complications it does not stand inferior to vaccine if not superior. It may be used with discrimination in various skin diseases, furunculosis and in any manifestations of general and local infection by streptococcus, staphylococcus or B. coli. It has been used with advantage in various septic ulcers, sinuses, infective abscesses, carbuncle, whitlow, otitis, urethritis and many other inflammatory, suppurative and ulcerative conditions. Its action on cases of acute puerperal sepsis is not worse than serum.

Non-specific protein has been tried to bring on reaction in cases of leprosy but the clinical results are not so encouraging. It has been also tried in asthma but with poor results.

TECHNIQUE

Protein may be used either in the form of cow's milk or a special preparation called "*Aolan*". About four ounces of fresh milk is to be boiled in a narrow pot for about twenty minutes and then allowed to cool. The required quantity of milk is then drawn up from the lower third of the column by a sterilised syringe and this fat free milk is then injected into the gluteal muscle. The site of injection is then well massaged. If there is subsequent pain and tension at the site of injection, hot boric compress may be applied to relieve the inflammation. Where injections are to be repeated again and again, subsequent injections may be given between the layers of external oblique muscle of the abdominal wall or even in deltoids.

Dose.—Five to ten c. cm. may be used without any untoward results, but some start from 2 c. cm. increased by 2 c. cm. till 10 c. cm. is reached which dose is then continued. In suitable cases where a severe reaction is needed, 15 c. cm. or even 20 c. cm. may be given in one injection but the writer has no personal experience of pushing such heroic doses. Injections are to be given twice a week.

Aolan.—It is a preparation of milk albumin supplied in 5 c.cm. and 10 c. cm. ampoules to be injected intramuscularly. First injection is 5 c. cm. and later it is increased to 7 or 10 c. cm. twice weekly. Altogether about six injections are necessary for a case.

Reaction.—A short rise of temperature is expected after four hours which may last from twelve to twenty four hours. Greater the reaction, better the results. In some susceptible subject, severe reaction resembling an anaphylactic shock may be met with

immediately after the injection and an injection of 0.5 c. cm. of adrenalin chloride solution can easily suppress it.

During the past two years the writer has tried protein in a few cases with satisfactory results and the following two cases were of outstanding importance and deserve mention here.

Case I.—M. B. Hindu, Brahmin, male, aged 36 years, who had been suffering from gonorrhoea for the last five years, was suddenly attacked by an exacerbation. All the joints in the extremities were swollen and painful, he was suffering from high fever and urethritis. The patient was unable to move about and was passing sleepless nights. All symptomatic treatment failed the severity of the symptoms. Then injection of milk was resorted to (in 10 c. cm. doses twice weekly), which at once brought the temperature down; the swelling and pain in the joints were markedly reduced. Eight injections were given in all in four weeks time and the patient was decidedly better. Subsequently a course of gonorrhoeal vaccine completely cured him.

Case II.—S. T. a Nepali woman, aged 30, who had aborted once about 5 years ago was suffering from pain and tenderness on and around the uterine region and occasional foul discharge, during these 5 years and was treated many times in many hospitals but no permanent cure was effected. Injection of Aolan was commenced and she wonderfully improved even after only three injections. It brought a general reaction upon her systems. She looked cheerful, gained in weight and was finally discharged cured after three weeks.

References:—

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Green-Armytage V. B. and Mitra D. N. (1930a) *The place of Non-specific Protein Therapy in Gynecology*. *Ibid*, LXV, 1, 192.

*THE ANAEMIA OF PREGNANCY IN THE LABOUR FORCE ON A GROUP OF TEA ESTATES IN ASSAM

BY

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Introduction.—The Anæmia of Pregnancy is a disease of hitherto obscure origin, distinct from secondary anæmia, mainly confined to the tropics and characterised by megalocytosis and high colour index. In India, since the year 1923 the disease has been studied in the Presidency towns of Calcutta and Bombay by distinguished workers and their records published, before which the importance of a paper specially from a man of my position naturally sinks into insignificance. But so far as I know this fell disease which has a heavy toll on so many maternal lives has not been investigated in Assam Tea Gardens where the conditions are probably somewhat different from those of the Presidency towns. To my knowledge only one paper was recently published by Dr. J. C. Bhattacharjee* from Sycotta Tea Estate Hospital in the district of Sibsagar with records of six cases. But unfortunately the data given were insufficient to show conclusively that those cases were of pernicious type. It must however be pointed out that in a Tea Garden the facilities for research work are quite limited and the Garden Doctor, handicapped as he is by multifarious duties, has very little time for such a specialised work. Under the kind guidance of Dr. D. P. Williams, the writer had carried out a systematic investigation, so far as facilities permitted, on the Bokpara Tea Estate from March 1930 to October 1932 and on the five other Gardens from January 1932 to September 1932 by the kind permission of the Garden Doctors concerned, a short summary of which will follow.

Historical sketch.—It would be interesting to review the history of this ill-recognised condition from the old days as far back as possible before recounting our personal experience. The disease was first described as a separate entity by Lebre of Switzerland in the year 1854. Subsequently important contributions to our knowledge about it were made by the following workers:—

Gusserow, Biermer, Erlich, Esch—In Europe.

McSwiney, Balfour, Wills, Mehta, Talpade, Mitra, Green-Armytage and Gupta—In India.

The number of cases in Europe are very few compared with those of India. About 500 cases were observed in India in 9 years (1923-1932) against about 109 cases in Europe in 70 years (1854-1924).

* A paper read at a meeting of the Assam Frontier and Dudla Beta Medical Society held on 3rd December 32 and specially sent to the Antiseptic for publication.

Chart 1.
Maternity admissions and anæmia cases (both secondary and pernicious).

Name of the gardens.	Total maternity admissions.	Cases of secondary anæmia.	Cases of pernicious type of anæmia.	Total cases of anæmia.	Pc. of total anæmia to mat.admiss.	Pc. of secondary anæmia to mat.admiss.	Pc. of pernicious anæmia to total anæmia.
Bokpara	289	29	3	32	11.07	10.03	9.37
Budla Bota	86	20	1	21	24.41	23.25	4.76
Sookreting	89	35	1	36	40.44	39.32	2.77
Dangri	71	14	1	15	21.12	19.71	6.66
Talap	99	22	5	27	27.27	22.22	18.51
Khobang	126	38	1	39	30.95	30.15	2.56
Total ...	760	158	12	170	22.36	20.78	7.05

PLEASE NOTE:—

In all the charts and throughout the paper

- (1) Maternity admissions will mean the number of women admitted into the pregnant list.
- (2) Anæmia cases will mean the anæmia cases amongst pregnant women only.
- (3) The figure noted against Bokpara is the total number from March '30 to October '32.
- (4) The figure noted against five other gardens is the total number from January '32 to September '32.

Observations.—We had opportunities to watch and study 12 cases only, which is evidently a very small number. In Tea Gardens secondary anæmia in pregnant women caused by malaria, ankylostomiasis, dysentery etc., is very common. In our series there were altogether 760 maternity admissions with 170 cases of anæmia (22.36%) of which 158 cases (20.78%) were secondary leaving a residue of 12 cases (1.38%) of anæmia of idiopathic origin (vide chart 1) that is roughly 16 per 1000 maternity admissions which is little higher than half the mean figure of 'Mitra and McSwiney together' ². We may point out in this connection that economic condition of the coolies of this group of gardens is better than that of the middle class urban population of Calcutta and that they live in more natural surroundings that is in plenty of sun shine and fresh air. I intend not to enter into details but to summarise our observations in short under two heads—Bed side and Laboratory.

Bed side Picture.—*Onset*—The disease has an insidious onset usually with pallor, dropsy, fever, enlarged liver and spleen, breathlessness and gastrointestinal disturbances mainly in the form of entero-colitis. In our series, in 11 cases the disease had an insidious onset, the patients having suffered from no other illness before. One case was first admitted in hospital with influenza without the slightest sign of anæmia. She suffered from Influnza for two weeks when her Hb. came down to 35% and liver became acutely enlarged. Pallor and puffiness of face and oedema of feet and ankles were present in 10 cases (83.3%), fever in 7 cases (58.3%); enlarged spleen in 8 cases (66.6%); entero-colitis in 6 cases (50%); breathlessness in 4 cases (33.3%); bronchitis in 4 cases (33.3%); and soreness of the mouth in 2 cases (16.6%).

Course and termination.—The disease progresses rapidly and ends either in death or in premature labour to be followed usually by complete recovery but occasionally by death during puerperium. In our series, the longest stay in hospital is 48 days and the shortest 4. The patients are ill, look depressed and often lie quite still. This is contrary to the observation of Gupta³. Pulse rapid and of moderate tension. Usually there is a reluctance for food, but some of them take their food well. A few premature delivery is the usual rule. All the labours in our series were premature. Neither nervous manifestations nor post-partum hæmorrhage was noticed in a single case.

Mortality. This may be summarised as follows as deduced from our series of cases:

Mothers:	No.	Per. of total cases.
Died undelivered	4	33.3
Died in 1st week of puerperium	2	16.6
Delivered and recovered	4	33.3
Undelivered & recovered	2	16.6
Total recovery	6	50.0
Total deaths	6	50.0
Children:		
Alive and well	1	8.3
Still born	3	25.0
Died within a week after birth	2	16.6

Prognosis.—Cases with insomnia and entero-colitis have a bad prognosis. In our series, of the two cases with insomnia all (100%) died whereas of the 6 cases with entero-colitis, 4 cases (66.6%), succumbed. Cases which survive the delivery and have got an uncomplicated puerperium usually have a good prognosis. In our series, of 6 cases who delivered, two died giving a mortality rate of 33.3% after delivery.

Morbid Anatomy & Pathology.—We had no facility to hold a single post-mortem examination. So we are not in a position to give any observation of our own. Balfour¹ held necropsy in two cases, Mitra² in 4, and Gupta in several of which he illustrates 4 only. Those who are interested in this will please refer to the works of these authors.

Laboratory Findings:

Urine.—Albuminuria was present in two cases (16.6%).

Stool.—Hookworm Ova were found in 3 cases (25%).

Blood:—

Total R. B. C.—Count was done in 8 cases. The average is 1,500,000, the highest being 2,000,000 and the lowest 990,000.

Total W. B. C.—Count was done in 7 cases. The average is 7671.4, the highest being 12000 and the lowest 3700.

Colour Index.—It was taken in 8 cases. The average is 1.14 the highest being 1.35 and the lowest 0.9 (in this case blood was taken half an hour after delivery).

Differential Count.—It was done in 9 cases; the average is as follows:—

Poly	...	63.3%
Lympho	...	27.2%
Leucos	...	3.2%
Eosino	...	1.2%
Others	...	5.1%

Hb. on admission.—The average is 33.7%, the highest being 45% and the lowest 20% (taken by Tallqvist's Haemoglobin scale).

Malarial parasites.—Not found in a single case.

Other Blood changes.—Megaloblasts, anisocytosis, polychromasia, & poikilocytosis were present in all the cases (100%); Normoblasts in 10 cases (83.3%); Pre-erythrocytes & Myelocytes in 8 cases (66.6%); Punctate Basophilia in one case (8.3%); Polymorphos with more than 4 nuclei in all cases (100%); Microblasts, Cabot's rings & Howell-Jolly bodies in one case (8.3%).

Blood Pressure.—It is low but this could not be taken in our series of cases.

Biochemical Studies.—This was done by Willis & Mehta³ but the findings were of no practical value.

We had however no facility to do it.

Test meal.—Achlorhydria is rarely present. We had no facility to verify it.

Treatment.—We will not occupy time by referring to the importance of fresh air, good food, sun shine etc., which is universally known. In our series of cases matikalai and malted codliver oil formed an essential part of the dietary. Diet was regulated by observing the digestive capacity of the patient. Of the medicinal measures, liver extract (P. D. & Co.) was given to all the cases. In half the cases Marmite was also tried as advocated by Lucy Wills⁷. But this was not at all liked by our patients. We had not tried ventriculin or stomach extract in a single case. Injection of whole blood has been found to do good in some cases in as much as it stimulates the Hæmatopoietic system. Blood transfusion is efficacious in grave cases of anæmia. Two of our cases could ingest neither liver extract nor marmite. So they were given liver (Hepatex P. A. F.) intravenously—3 injections in each case—in one case before delivery and after delivery in the other. The difference in the effect will be discussed later on. Massive doses of iron failed to improve a single case. Artificial termination of pregnancy, the ideal practice in some cases advocated by McSwiney⁸ is impracticable in Tea Gardens. Mitra has advocated fractional doses of deep X-ray to the liver, spleen and heads of long bones for stimulation of the reticulo-endothelial system and formation of red cells but we had no facility to try it. Complications were treated symptomatically and require no elaborate description.

Ætiology.—Caste incidence—Total maternity admissions by castes have been summarised in Chart 2. From Chart 3 we get the caste incidence of pernicious cases as follows:—

Chart 2.

Total maternity admissions by castes.

Name of the gardens.	Kamar.	Munda.	Goala.	Telenga.	Domb.	Oriya.	Mohali.	Oraon.	Porja.	Kond.	Sowra.	Kharia.	Gonda.	Santal.	Others.	Total.
Bokpara	...	22	35	...	11	23	65	37	1	60	6	15	5	7	2	289
Budla Beta	...	4	9	...	1	4	36	11	9	...	...	...	...	...	12	86
Sookreting	...	3	43	3	...	2	1	7	2	...	...	...	2	5	21	89
Dangri	...	9	35	3	...	2	3	...	...	...	...	2	...	5	12	71
Talap	...	10	13	2	1	22	3	...	18	...	...	7	...	1	22	99
Khobang	...	6	38	4	...	5	16	...	21	...	...	1	...	5	30	126
Total ...	54	173	12	13	58	124	55	51	60	6	15	15	9	18	97	760

Chart 3.
Caste incidence of anæmia cases (both secondary and pernicious).

Castes.	Maternity admissions.	Cases of secondary anæmia.	Pc. of secondary anæmia to mat. admissions.	Cases of pernicious-type anæmia.	Pc. of pernicious anæmia to mat. admissions.
Kamar	54	13	24.07	3	5.55
Munda	173	40	23.12	1	0.57
Goala	12	3	25.00	1	8.33
Telenga	13	2	15.38	2	15.38
Domb	58	8	13.79	2	3.44
Oriya	124	28	22.56	1	0.80
Mohali	55	9	16.34	2	3.63
Oraon	51	11	21.56	...	...
Porja	60	4	6.66	...	...
Kond	6	2	33.33	...	...
Sowra	15	...	...	...	...
Kharia	15	3	20.00	...	...
Gonda	9	2	22.22	...	...
Santal	18	5	27.77	...	...
Others	97	28	28.86	...	...
Total ...	760	158	20.78	12	1.58

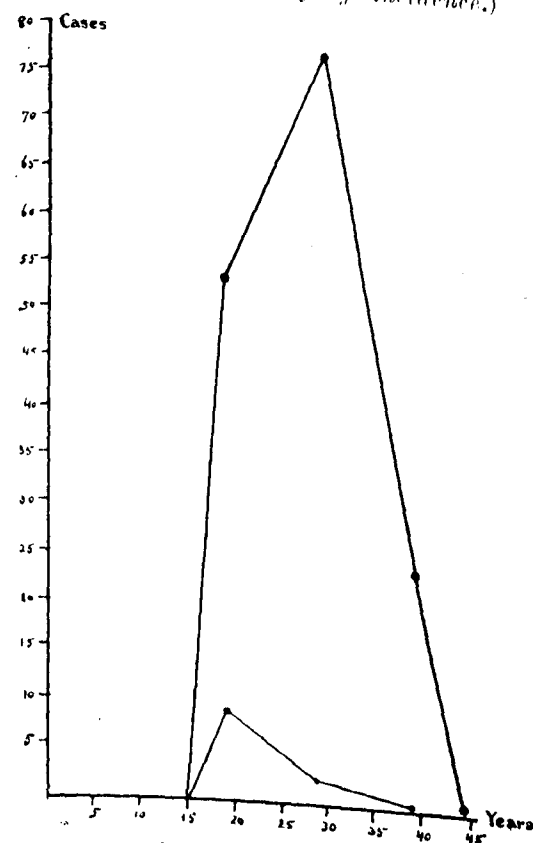
Chart 4.

Age incidence of anaemia cases (both secondary and pernicious).

SECONDARY CASES.			PERNICIOUS CASES.		
Age period.	No. of cases.	Pc. of total cases.	Age period.	No. of cases.	Pc. of total cases.
15-19 years.	53	33.5	15-19 years.	8	66.6
20-29 "	78	49.4	20-29 "	3	25.0
30-39 "	25	15.8	30-39 "	1	8.4
40-45 "	2	1.3	40-45 "		
Total.	158			12	

Chart 4--(a)

(Showing the graph of age incidence.)



THICK LINE—represents secondary cases.
THIN LINE—represents pernicious cases.

Caste	Maternity admiss.	Cases of pernicious anaemia	Pc. to admiss.
Kamar	54	3	5.55
Munda	173	1	0.57
Goala	12	1	8.33
Telenga	13	2	15.38
Domb	58	2	3.44
Oriya	124	1	0.80
Mahali	55	2	3.63

Age Incidence.—This is summarised in charts 4 & 4 A. It is as follows:—

Age period	No. of cases	Pc. of total cases.
15-19 years	8	66.6
20-29	3	25.0
30-39	1	8.4

It is seen that the highest incidence is between 15-19 years of age which corresponds with the findings of Gupta.

Parity Incidence.—This is summarised in Charts 5 & 5 A. It is as follows:—

Chart 5.

Parity incidence of anaemia cases (both secondary and pernicious).

SECONDARY CASES.			PERNICIOUS CASES.		
Parity.	No. of cases.	Pc. of total cases.	Parity.	No. of cases.	Pc. of total cases.
1—para	49	31.0	1—para	5	41.6
2— "	41	26.0	2— "	4	33.4
3— "	30	18.9	3— "	2	16.7
4— "	21	13.3	4— "	1	8.3
5— "	6	3.8	5— "	—	—
6— "	5	3.2	6— "	—	—
7— "	3	1.9	7— "	—	—
Over 7—para.	3	1.9	Over 7—para.	—	—
Total ...	158			12	

Chart 5—(a)
(Showing the graph of parity incidence).

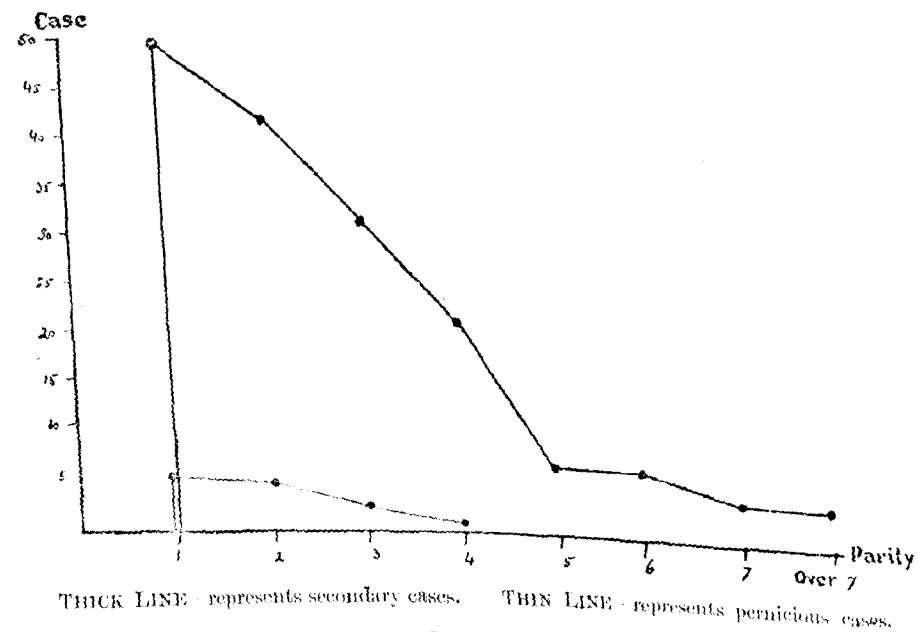


Chart 6.
Seasonal incidence of anaemia cases (both secondary and pernicious).

SECONDARY CASES.					PERNICIOUS.				
Months.	Cases.	Pe. of total.	Quar-ter cases.	Pe. of total.	Months.	Cases.	Pe. of total.	Quar-ter cases.	Pe. of total.
January ...	11	6.9	30	18.9	January ...	—	—	—	—
February ...	7	4.5			February ...	—	—		
March ...	12	7.6			March ...	—	—		
April ...	3	1.9	33	20.8	April ...	1	8.3	6	50.0
May ...	17	10.7			May ...	2	16.7		
June ...	13	8.2			June ...	3	25.0		
July ...	18	11.4	72	45.6	July ...	2	16.7	5	41.7
August ...	27	17.1			August ...	2	16.7		
September ...	27	17.1			September ...	1	8.3		
October ...	9	5.7	23	14.6	October ...	1	8.3	1	1.3
November ...	5	3.2			November ...	—	—		
December ...	9	5.7			December ...	—	—		
Total ...	158		158		Total ...	12		12	

Chart 6—(a).
(Showing the graph of seasonal incidence).

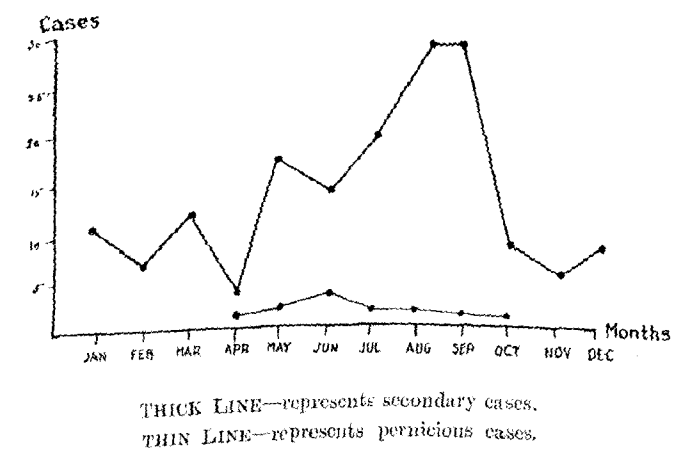
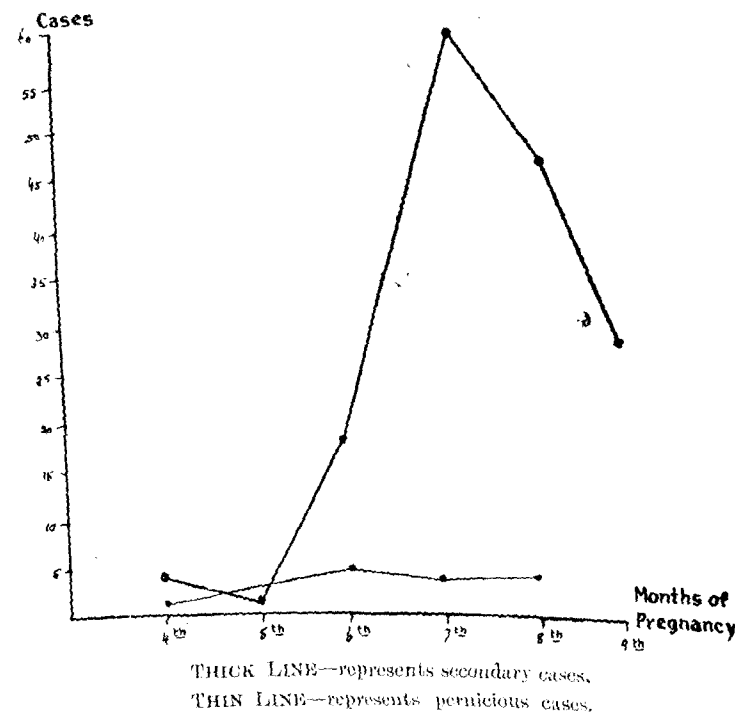


Chart 7.
Showing the onset of anaemia cases (both secondary and pernicious) by months of pregnancy.

SECONDARY CASES.			PERNICIOUS.		
Month of pregnancy.	No. of cases.	Pe. of total.	Month of pregnancy.	No. of cases.	Pe. of total.
4th month ...	2	1.9	4th month ...	1	8.3
5th " ...	1	0.6	5th " ...	—	—
6th " ...	18	11.4	6th " ...	4	33.3
7th " ...	59	37.3	7th " ...	3	25.0
8th " ...	47	29.8	8th " ...	4	33.3
9th " ...	30	19.0	9th " ...	—	—
Total ...	158		Total ...	12	

Chart 7-(a)

(Graph showing the onset of anaemia by months of pregnancy.)



Parity	No. of cases.	Pc. of total cases.
1 Parae	5	41.6
2 "	4	33.4
3 "	2	16.7
4 "	1	8.3

It is seen that the disease occurs chiefly in primiparae which corresponds with the finding of Gupta. The incident is however not much less in bi-parae. Mitra states that most of his cases were multiparae.

Seasonal incidence—This is summarised in charts 6 and 6 a. It is seen that the disease chiefly occurs in the 2nd and 3rd quarter of the year. Though the number of cases is quite small, this has roughly tallied with the findings of other workers who have observed most of their cases in the second half of the year. It is probable that this would have perfectly tallied if the investigation could be continued to the end of the year. But unfortunately

owing to heavy pressure of work we had not the opportunity to do it on five gardens after the month of September. Any how it is apparent that the anomaly is not great.

Incidence of the disease by months of pregnancy—This has been summarised in charts 7 and 7A from which we find that only one case occurred in the 4th month while the rest—11 cases (91.1%) occurred in later months of pregnancy. This tallies with the findings of other observers.

Discussion.—(a) *Consideration of etiological factors*—3 theories are put forward by different observers. Leaving off all generalisations and experimental details I will just mention the existing theories none of which however has uptill now been accepted as conclusive.

(1) Blood infection theory suggests that the anaemia is due to invasion of blood stream by some hæmolytic organisms like Haemolytic Streptococci, B. Welchii or Haemolytic B. Coli derived from the gut. But evidences collected so far cannot conclusively prove this view.

(2) Theory of Toxaemia. This theory suggests that the anaemia is caused by some toxins derived either from the gut or from the products of conception. This theory is also open to question and cannot be accepted as conclusive.

(3) Vitamin deficiency theory—This theory suggests that deficiency in diet of vitamins A and C is responsible for producing this anaemia which has been supported by animal experiments. Wills also found out that Vitamin B deficiency is also equally responsible for producing this disease. Weight of opinion now a days is in favour of this theory. I shall now endeavour to see how far this theory is applicable to our series of cases.

By making a dietetic survey of the various castes of coolies we found out that the common factor which is absent from their general diet is animal fat (Vitamins A and D). They however derive Vitamin D from sun-shine. In as much as Vitamin D is not known to have any connection with the production of anaemia the consideration of Vitamin D is irrelevant here. The common factor which is present in their general dietary is Goor and Sag (leafy vegetables)—Vitamins B and C, part of which is of course destroyed in the process of cooking. Now whether the amount of Vitamins B and C taken by them is adequate requires to be considered.

From Chart 1 we notice the lowest Pc. of total anaemias at Bokpara and from our Hospital records we noted a complete

absence of Pernicious cases during 1930 and 1931 on that garden. During 1930 and 1931 the pregnant women of that garden were fed daily with an additional diet namely Matikolai and Goor which were discontinued at the beginning of 1932 from economic considerations. There has been on that garden comparatively higher incidence of total anæmia as well as incidence of Pernicious-type anæmia among pregnant women in 1932. Apparently it strikes one that withdrawal of this additional diet-Matikolai and Goor from the dietary might be responsible for this incidence. If this is so, it comes down to this:—In general dietary of the coolies, there is (i) presence of Vitamins B and C in inadequate quantities (ii) and absence of Vitamin A—the anti-infective factor.

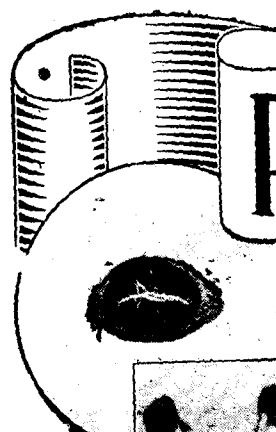
Now let us look to the matter from another aspect. From Charts (1) and (3), we are faced with the following facts.

- (i) Pernicious cases are not proportional to the cases of total anæmia in different gardens.
- (ii) Pernicious cases are not proportional to the total maternity admissions in different castes.

As the diet is the same in both the secondary and pernicious cases, the question naturally arises why some of them turn pernicious while others escape. From Charts 4, 5, 6 & 7 it is evident that there is a fair coincidence between the secondary and pernicious cases in age, parity and seasonal incidences as well as the onset. In short it appears that border line between the secondary and pernicious cases is very narrow which was also observed by Green-Armytage. So not only vitamin deficiency but some thing else as well is responsible for the production of this pernicious type of anæmia. What is that 'some thing' is to be searched for.

DeLee¹⁰ mentions the Anæmia of Pregnancy as a deficiency disease does not say 'Simple Vitamin deficiency'. Gorsky¹¹ says that 'normally there is a specific substance in the body that enables the bone marrow to mature the Red Blood Cells..... Any condition which causes secondary anæmia in a normal person will cause pernicious anæmia in a person who has a deficiency of this specific substance'. Tice¹² lays stress on individual susceptibility and corroborates his statement by Pinto's studies of the bone marrow in pernicious anæmia which led him to believe that there is in the victims of this disease a developmental defect by which there is inadequate development of adult (Hormoblastic) 'bone marrow and a compensatory hypertrophy of the feta (megaloblastic) bone marrow. Through the action of some exciting cause which may be the board tapeworm, Syphilis, Pregnancy





(Left) Genital organs and section of uterus of control animal



(Right) Genital organs and transverse section of uterus of infantile monkey treated with Progyron dragées

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or that which causes pernicious anæmia, the signs and symptoms of pernicious anæmia are produced.

I think, all that has been said reduces itself to this:—

In producing Anæmia of pregnancy (1) Deficiency of Vitamins A, B and C is an essential but not the only factor. (ii) Pregnancy is an essential and not an accidental factor. (iii) A personal constitutional factor is involved in its production.

(b) *Consideration of blood picture*—What the most important diagnostic features are must be discussed here. There are (i) marked megalocytosis (Piney)¹³, (ii) marked anisocytosis (Price-jones)¹⁴ and (iii) high colour Index.

Poikilocytosis, Polychromasia, slight Anisocytosis or finding of one or two megaloblasts or normoblasts is not conclusive of diagnosis. We took colour index in 9 such cases. The average index was found to be 0.5, the highest being 0.9 and the lowest 0.4.

(c) *Consideration of treatment*.—We found liver treatment the most effective one which acts much better after delivery which was beautifully demonstrated in two cases to whom intravenous liver was given. The patient who got it after delivery showed wonderful improvement. In five days time Hb was increased by 15%, whereas in the case who got it before delivery it simply helped her in holding her own. The efficacy of liver is judged by the degree of Reticulocyte-response¹⁵ in blood which has an important bearing on the prognosis of a case. As marmite was not liked by our patients we have used it with limitations and so we are not in a position to give definite opinion about it. But from economic standpoint it is certainly very welcome as it is much cheaper. As we have never used Stomach Extract, any remark about it will be unwarranted. Drawback of liver is however due to its prohibitive cost. Davidson¹⁶ has recently advocated fish liver extract in the treatment of Pernicious anæmia and claims it to be equally effective as mammalian liver and much cheaper. We had not the opportunity to try it and better refrain from giving any opinion.

Rationality of Liver treatment.—One may reasonably ask why liver is given. It is not difficult to understand if we have carefully followed the etiology. Liver contains not only the anti-infective Vitamin A in abundance and to some extent Vitamins B & C, but it also contains that normal specific substance described by Gorsky, deficiency of which causes pernicious anæmia. This is why liver is administered in this anaemia and it is so efficacious,

SUMMARY

- (1) The Anaemia of Pregnancy occurs in some Tea Gardens of Assam.
- (2) It affects more the primiparae than the multiparae.
- (3) It occurs chiefly in women between 15-29 years of age.
- (4) It occurs chiefly during the second half of the year.
- (5) It is chiefly a disease of the later months of pregnancy.
- (6) Its incidence is not necessarily proportional to the total anaemia in different Gardens and to the total maternity admissions in different castes.
- (7) Border line between this anaemia and secondary anaemia is very narrow.
- (8) Absence of Vitamin A and deficiency of Vitamins B & C in the diet of the coolies is an important factor in the production of this anaemia.
- (9) Pregnancy is an essential and not an accidental factor in its causation.
- (10) An unexplained constitutional factor also plays an essential part in the causation of this anaemia.
- (11) Marked megalocytosis, marked anisocytosis and high colour index are the surest diagnostic features of the disease.
- (12) Liver is the best therapeutic agent personally tried by us.

ACKNOWLEDGEMENTS

I am indebted to my chief Dr. D. P. Williams but for whose guidance this work would be impossible and to Mr. H. O. J. Maxwell, the Manager of Bokpara T. E. for his unfailing support in the same. My grateful thanks are also due to Col. C. Melver, I.M.S., Superintendent Berry-White Medical School, for giving me every facility to use his magnificent library and to my ex-teacher Dr. N. Ghosh M.B., for his kind suggestions in preparing this paper. I have also to thank the assistant doctors of Budla Beta, Sookereating, Dangri, Talap, and Khobang Tea Estates allowing me to use their cases and case records, for compiling the necessary figures and for their hearty co-operation.

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CASES AND COMMENTS.

AN IMPORTED CASE OF KALA-AZAR

BY

A. R. MANSOOR, M.D., B.S. (Durh), D.P.H. (Eng. & Edin.),
University Hospital, Aligarh.

THE practitioners in Assam and Bengal are probably as familiar with kala-azar as with malaria, but in other provinces those who can claim even a nodding acquaintance with the disease are few and far between.

The modern rapid, safe, and cheap methods of transport, though one of the chief factors in the advancement of humanity, are not altogether an unmixed blessing. Along with knowledge and progress they are also the chief means of carrying and disseminating diseases hitherto confined to one special locality, far and wide. The spread of epidemics by the trade routes is a well established fact.

My object in describing the following case is to draw attention to the extreme importance of always bearing in mind the possible occurrence of any disease in any locality, irrespective of the fact that the disease in question is supposed to be a special monopoly of some district far away.

S. S. H. male aged 22, student, a resident of Bengal was admitted into the University Hospital on 4-4-33 complaining of fever for the last three days.

Present History.—Patient is of slight spare build, pale, cheerful disposition. Temp. 101, pulse 90, respiration 24, tongue a little furred, throat slightly congested, lungs and liver show no abnormality, spleen palpable reaching well below the umbilicus and hard to touch, urine shows no abnormality, blood negative for malaria parasites.

Previous History.—Has been suffering from attacks of fever off and on for the last two years, these bouts were diagnosed as chronic malaria and treated as such. Blood was never examined. A couple of days before an attack he feels a little pain in the splenic region and the spleen becomes harder and tense.

Family History.—Nothing of importance.

Treatment.—The patient was put on diaphoretics, and blood was examined repeatedly for four days but always proved negative to malaria parasite. Still under the impression that the fever may after all be malaria, quinine and plasmoquinine were given a trial for three days but with no effect on the temperature.

It was remarked that after two days of fever the general weakness of the patient was so intense that instead of only four or five days of fever he had sustained a high temperature for a fortnight or more; moreover the pallor of conjunctiva was abnormally rapid. The double rise of temperature, enlargement and hardness of the spleen, the absence of malaria parasite, and the fact, that he came from a part of Bengal where kala-azar is not unknown, gave me the hunch that his is most probably a case of kala-azar. On examining the blood more carefully it was observed that there is marked reduction in erythrocytes as well as haemoglobin, that there was a fair number of microcytes. Leucopenia was well marked affecting the polymorphs mostly, while there was a relative increase in the number of lymphocytes. Eosinophils and mononuclears were nearly absent. It was observed that coagulation time was reduced to about a minute. The Aldehyde test was positive.

The only remaining procedure to complete the evidence was

splenic puncture, but on account of the attending danger of hæmorrhage, it was not resorted to. However there was not the least doubt about the veracity of diagnosis.

Further progress of the Case.—On 11-4-33 the patient's weight was 87 lbs., temperature 99, pulse 66, resp. 30, he was given 0.025 gm. "urea-stibol" intravenously preceded by an hypodermic injection of 0.5 c.c. Adrenalin. Even after a few hours the patient felt a distinct improvement in his general well-being, though the temperature fluctuated between 100 and normal, and showed the usual double rise in twenty four hours. On 13-4-33 0.05 gm. "urea-stibol" was given. On 17-4-33 the temperature shot up to 101 and remained nearly constant till the 20th when 0.1 gm. "urea-stibol" was given, the temperature became normal on the 21st and has remained so ever since. The spleen is shrinking gradually and becoming softer in consistency. On 29-4-33 the patient weighed 91 lbs. On 30th 0.15 gm. "urea-stibol" was repeated. On 7-5-33 the patient weighed 94 lbs., and the spleen can be felt only one finger below the costal margin.

After the temperature became definitely normal the patient was put on big doses of iron and this he will continue for sometime.

The patient will be given a few more injections in course of time.

AN INTERESTING CASE

BY

DR. S. K. CHAUDHURY, L.M.F.,

Prop: "Muktakeshi Medical Hall", Ashuganj, P. O., A. B. Ry.

On 18-6-31, I was called to undertake treatment of a Hindu boy named—'A'—, aged 7 years.

Previous History.—The father of the boy could give no noteworthy history but something about the present illness as follows:—

9-6-31 The boy suddenly got fever with headache and rigor. Fever came in the afternoon and lasted for the whole night. His father guessed that temp. was about 105°F at midnight.

10-6-31 Complete remission in the morning with profuse perspiration all over the body. The fever came again at about 11 A. M. with rigor and came down to normal in the evening with perspiration as before.

- 11—6—31 Rise of temp. in the morning with rigor. Lasted for the whole day and night.
 12—6—31 Fever came to normal at about 7 A. M. Again it came with rigor at 8 P. M.
 13—6—31 Remission at about 7 A. M. Rise of temp. with rigor at noon.
 14—6—31 From this day the fever began to come at noon and disappear in the evening and reappear again at night up to 17-6-31.
 18—6—31 What I found:—

- (i) Temp. 102°F (10 A. M.)
 (ii) Pulse 95 } Per minute.
 (iii) Respiration 23 }
 (iv) Eyes Red.
 (v) Lower lip Cracked.
 (vi) Tongue White central coating with teeth marks in margins.
 (vii) Liver and spleen not enlarged.
 (viii) Abdomen Slightly tympanitic.
 (ix) Urine High coloured, acid.
 (x) Blood not examined.
 (xi) Bowels not moved since the onset of the disease.

Treatment.—(18—6—31.)

- (a) The head was thoroughly washed on which redness of the eyes disappeared.

(b) R

- Sodi. citras ... gr. xx.
 „ sulph ... gr. xv.
 Mag. sulph. ... gr. xxx.
 Aq. menth. pip. ... 3ss.
 Mist. 3 such. one for a dose. To be taken every 3 hrs.

- 19—6—31 Bowels moved in the morning with watery discharge containing blackish, hard fecal masses and very offensive smell.

R

- Quinine bihydrochlor ... gr. ii.
 Tr. nucis vom ... m iss.
 Liq. Arsenical hydro. ... m iss.
 Tr. auranti ... m xv.
 Aqua ... ad 3 ss.
 mist. 3 such. One for a dose. T. D. S.

At 12 in the noon the temp. was 100°F. and at 7 p. m. 101°F. when to my utter surprise I marked by palpating the abdomen 2 or 3 small nodular masses here and there. These were not very hard to touch and disappeared on pressure. I was counting for the reason when fortunately the boy was found pricking his nose with one hand and pulling the prepucial with the other. This gave me the idea of *Acaris* infection and I prescribed the following:—

R

- Santonin ... gr. i.
 Calomel ... gr. i.
 Purgen ... gr. ii.
 Sodi bicarb. ... gr. iv.

Pulv. divide into 2 powders. One to be taken every 2 hrs.

- 20—6—31 In the morning the temp. was 97.4°F. At 9 a. m. the boy passed liquid yellow coloured stool together with 125 Round worms—all being medium sized except two which were very big.

I prescribed the following:—

R

- Liq. ammon acet ... 3ss.
 Pot citras ... gr. vi.
 Tr. Card co. ... m v.
 Tr. digitalis (P. D. & Co.) ... m iiss.
 Aqua ... ad 3 ss.

Mist. 3 such. One for a dose. T. Ds.

There was no more rise of temp. this day.

- 21—6—31 Passed 24 big worms but no stool. No fever all day and night.

- 22—6—31 Passed 26 big worms with semi-liquid stool. Temp. 97°F. in the morning.

During the course of treatment he was put on milk and barley diet.

- 23—6—31 I found the boy crying for rice which I gladly allowed in a suitable form and gave a prescription of simple carminative mixture.

I no more found the nodular masses in the abdomen of the boy. He got no more fever. Now-a-days also I meet the boy here and there and find him quite healthy.

It is noteworthy that signs and symptoms of this case simulated those of malaria though a case of round worms.

AUTO-HAEMO THERAPY IN THE TREATMENT OF BUBOES

BY

K. VENKATA RAO, L.M.P.,

Madras

IN the Medical Annual of 1929 auto-haemo therapy is suggested as a possible cure for tropical buboes. Accordingly this treatment was tried both by Dr. S. R. Gurraj and myself in more than a dozen cases with gratifying success. In one or two cases there was evidence to show threatening pus formation in the bubo, which completely aborted by the institution of this treatment. The following case report of a case recently treated by me will amply speak for the efficacy of this simple yet reliable treatment.

On 13-3-1933 Mr. A. aged 25 years came with a history of suffering from an ulcer at the neck of the glans penis of about fifteen days duration, the ulcer appearing on the next day of the intercourse. Further he had a swelling of three days duration in the right groin which was hard and painful. The bubo was very tender the ulcer being of the soft variety. The ulcer was touched with Acid Carbolie and calomel powder was given for daily dusting.

14-3-1933. 10 c.c. of colossal iodine was given intravenously. Locally Antiphlogistine was ordered to be put. A saline purge was given.

15-3-1933. This day the patient was unable to walk and so had to engage a riksha. He had to walk limping and was unable to extend the leg fully. The swelling had increased and the glands were all matted. There was a slight rise of temperature.

16-3-1933. 2.5 c.c. of the patient's blood was drawn from his vein and immediately injected into the deltoid.

17-3-1933. There was a remarkable abatement of pain enabling the patient to walk pretty comfortably and to extend the leg fully though there was no reduction in its size. 9 c.c. of blood was injected this day into the deltoid.

19-3-1933. The patient was able to walk without any pain though at the commencement of the walk or after sitting for some time he experienced little pain. Movement at the hip joint was absolutely painless. There was a reduction in the size of the swelling. 8 c.c. of blood was again injected.

21-3-1933. Pain was almost absent except after walking long distances. The swelling was harder and reduced in size.

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As. 5 c.c. of blood only could be drawn this quantity alone was injected.

23-3-1933 The swelling was further reduced in size and the patient was quite comfortable. The ulcer had completely healed and the patient was discharged as cured.

When the patient was again seen on 21-4-1933 he was quite alright.

TWO CASES OF INFANTILE LIVER

BY

KALI GATI BANERJI, M.B.,

Sir Pardey Lukis Scholar, Suri, (Birbhum, Bengal).

"Infantile" Liver.—So popularly called is but biliary cirrhosis of liver found in young children. The disease is not limited to 'infants' as the name implies. As the pathogenesis of the disease is shrouded in mystery, treatment is indefinite. The prognosis is not hopeful except in early treated cases. The various theories have run afloat here, but we are not definite as to the cause. (1) Avitaminosis during antenatal period-mother and cow's milk both wanting in proper vitamins. (2) Congenital Syphilis in some cases. (3) Alimentary toxins first manifesting in infantile diarrhoea for dyspepsia. In my opinion, it is a toxic degeneration of liver in slow or acute form-toxins proceeding from alimentary canal, the anti-infective power of liver being already damaged by want of vitamin A and other vitamins which contribute to the general break of the immunity and the process is further aided by malaria and amobiasis in the tropics.

The following two cases are interesting as in both, the process ran very acute and both were carried by cholæmia. Cholæmia is but circulation of bile in the blood-but in an ordinary case of jaundice, there is either circulation of bile salts or pigment or of both, but in very few cases-we see cholæmia whether a cholin substance or an amine (M H 2) Base allied to that in uræmia is responsible, we cannot dogmatise at present.

1st Case—I was called in to see a case in the town who actually lay unconscious from 2 A.M. the previous night. The boy was aged 6-the son of a school teacher-boy actually walked and had his ordinary ways till he fell asleep at 9 P.M. He was having irregular temperature (104° to 101°) with remissions for the last 3 months, and was treated as a case of malaria with several

injections of quinine by some local doctor. About 3 weeks before death, jaundice started and occasional slight pain in liver. On examining, eyes were deeply tinted, there was oedema of two legs. Spleen increased, liver enlarged, no temperature. Pulse rate 48, Resp. 30. There was profound tympanitis. The boy was delirious and there were signs of air hunger. He was injected with 'pituitrin' $\frac{1}{2}$ c.c. for relief of flatulence and Hexamine 40% 2 c.c. He was given rectal saline and glucose by mouth and divided doses of hyd. Subchlor were given. There was no response and the patient succumbed at 11 p.m. Bradycardia was a marked feature and it forewarned me that the boy would not survive at any cost.

Case No. 2—My second case was the son of a doctor of repute in Rampurhat. He was aged 8. He, about a month ago, had mucous diarrhoea for some days, followed by jaundice and occasional rise of temperature. On the advice of his friend the boy was given a course of 6 injections of Emetine 3 grs. and it was reported that the jaundice cleared off. A week after, the boy started oedema of legs, oedema of face and pain in hepatic region. There was no albuminuria. There was a rise of temperature 100° in the evening. When I examined him, there was free fluid in the abdomen with an amount of oedema in face and legs. Eyes were slightly icteric, the pulse rate was normal for the child. He was then taken to Calcutta for treatment under an eminent physician of Calcutta. There was no abnormality in an eminent was negative for syphilis and malarial parasite and stool, blood urine was negative for B. Coli. Von den Bergh test was positive for "toxic" variety and there was hypoglycæmic of blood. The boy was given "Glucose" I. V. and Insulin in small amounts and drenched with alkaline, salines-diuretics and hepatics and purgatives. When "glucose" gave no result he was treated with 'calcium' injections. But one night he became delirious with high temperature and was carried off within 72 hours, his jaundice having increased. His blood was taken for culture when he was in cholæmia, but it was sterile.

We can't swear that emetine did not hasten the degeneration of hepatic cells concerned in biliary process. Here the primary colitis or diarrhoea heralded the toxic process of the alimentary system. That, when checked by emetine, told on the health of hepatic cells, biliary cirrhosis started which gave rise to portal cirrhosis and finally cholæmia carried him off.



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RECENT RESEARCHES ON VITAMINS

CONSIDERABLE work and study both on the clinical and laboratory side have been done on Vitamins these last few years, that it is impossible to give any detailed account of them in these short columns. However, an attempt has been made to present some of the recent advances on the subject so as to enable the readers to understand the real nature of these bodies as it stands to-day. About six vitamins have been so far identified and their nature, studied and we are all familiar with vitamins A, B, (or B₁), B₂ (or G), C, D, and E.

The exact chemical nature of these vitamins is still under investigation, though the chemical nature of the vitamins A, B, & D, have been somewhat definitely established.

Vitamin A.—This fat soluble, and anti-infective factor, responsible for maintenance of health and growth, is said to be derived from the red colouring matter of certain vegetables and is classified as an alcohol with the suggested formula $C_{20}H_{29}OH$. This hydrocarbon Carotene with the aid of an enzyme Carotenase, reacts with one molecule of water to form two molecules of vitamin A, in the human liver. Among the food stuffs rich in Vitamin A, Cod Liver Oil, Egg Yolk, Ripe Tomatoes, Green peas, and fresh green vegetables may be mentioned. Vitamin A is destroyed by oxidation, though it can withstand high heat within certain limits. Its presence in any food stuff may be fairly estimated by a colour reaction with antimony trichloride.

Vitamin B.—Several factors in this are recognized. Vitamin B complex has been known to be composed of B₁, B₂, B₃, B₄, and B₅, while another component has now been identified and

named Y. Vitamin B₁ also called P is the antineuritic or beri beri factor; B₂ (G) Pellegra preventive or "P. P." factor; B₃ is said to be essential for normal nutrition. B₁ has been isolated recently from B₃, while B₃ is regarded as necessary for the maintenance of weight. B₁ and B₂ factors have been specially studied. Food stuffs rich in B are maize, wheat embryo, rice embryo and polishings, dried peas, hard nuts, carrots, cabbages, orange pulp, mutton, beef, liver, egg yolk, yeast, lentils and meat extract. B₃ has been quite recently isolated by Windans as a crystalline compound by fractionation of yeast preparations. This is said to be a compound of sulphur with the formula C₁₂H₁₁N₄OS. The chemical composition of B₂ is still unknown.

Vitamin C.—This Anti Scorbutic factor is found in green leaf vegetables, cabbages, potatoes, grape fruit, tomatoes and mangoes in fairly good quantity. Rygh has found that unripe fruit contains narcotine and this is converted into Ortho-Phenyl-Methylnarcotine which is Vitamin C, during ripening. This observation is still unconfirmed. Other workers in the field have demonstrated this vitamin identity, in a derivative of glucose found in oranges. This is Hexuronic Acid closely related to the Glycuronic Acid formed from glucose by the liver.

Vitamin D.—The most familiar of the Vitamins is now being prepared chemically from ergosterol by irradiation and is available for use as irradiated ergostrol.

Vitamin E.—Nothing much is definitely known about this factor, though experimental investigations prove that it is concerned in the process of reproduction. Further investigations are necessary before it is adopted as a therapeutic agent.

We have only given a meagre outline of the more recent advances in vitamins; and we would refer our more interested readers for a fuller and more detailed study of the subject to 'The Medical Research Council Special Report No. 167.'

REGULATIONS REGARDING THE ADMISSION OF L. M. P. DIPLOMA HOLDERS TO THE M.B., B.S. DEGREE OF THE MADRAS UNIVERSITY

WE have had numerous enquiries recently regarding admission of L. M. P. Diploma holders to the M. B. B. S. Degree examination of the Madras University and though we replied to them individually then and there, we deem it expedient to publish the regulations governing their admission, for the information and future guidance of all our L. M. P. constituents.

Only a few seats are reserved in the Madras Medical College for the L. M. P., students and preference is always given to Madras L. M. Ps. The M. B. B. S., degree of the Madras University or for the matter of that, any other University in India is not recognizable by the General Medical Council of Great Britain and those who wish to pursue post graduate study in England after taking the M. B. B. S., degree of the Madras University will have to undergo some more ordeal in England before they can be admitted for higher degrees. As the duration of the ordeal varies in the various Universities, candidates would do well to apply to the Dean of each University for necessary information. We specially point this out here because there seems to be some misapprehension among certain L. M. Ps., as gathered from their correspondence, that the Madras University degree is recognizable for British qualification, which unfortunately is not. The withdrawal of recognition of all the University degrees in India by the General Medical Council of Great Britain is, as our readers are well aware, the cause of the bitter struggle that is at present going on in this country between the Indian Universities and that august body and the basis of the creation of an "All India Medical Council," now in the Legislative anvil.

The following are the regulations referred to above:—

"A candidate who holds the Diploma of L. M. P., or any other qualification accepted by the Syndicate of the University of Madras as equivalent thereto, will be admitted to the Degree of M.B.&B.S. provided:—

- (a) he has passed the Diploma Examination at least five years before the date of application for the Final M.B. & B. S. Degree Examination;
- (b) he has passed the Intermediate Examination in Arts and Science of this University, or an examination accepted by the Syndicate as equivalent thereto, or an examination accepted by the General Medical Council for entrance to the medical course;

Note.—The syndicate of the University of Madras has decided to recommend to the Academic Council that the Cambridge School Certificate with any three credits be accepted for purposes of admission of the L. M. P. Diploma holders to the M.B. & B. S., course.

- (c) he has attended a course of study for not less than one academic year in a college of medicine recognized by or

affiliated to this University before appearing for the second M. B. & B. S. Examination; and not less than one academic year subsequent to passing the second M. B. & B. S. Examination and before appearing for the Final M. B. & B. S. Degree Examination, during which year the candidates shall be required to produce evidence of having attended clinical course in a medical college recognized by or affiliated to this University; and

(d) he passes Part II of the First and the whole of the Second and Final M. B. & B. S. Examinations of this University.

EXPLANATORY NOTE

1. Diploma holders may begin the special course three years after passing the Diploma Examination.

2. It is not necessary that Diploma holders should have passed the Intermediate Examination with Physics and Chemistry as two of the three optional subjects prescribed for the Examination.

3. The courses, prescribed for the subjects comprising Part II of the First M. B. Examination and Parts I and II of the M.B. Examination, may be taken concurrently but candidates will not be permitted to sit for the Second M. B. Examination before they pass Part II of the First M. B. Examination. So also they will not be permitted to commence the course prescribed for the Final M. B. Examination, before they pass the Second M. B. Examination. Before they appear for the Final M. B. Examination they should also produce evidence of having attended the required clinical courses.

Candidates may appear for part II of I.M.B. privately without putting any course at this College. But admission to the II M.B. course cannot be guaranteed as the number of seats is very limited.

The fees for the courses are as shown below :—

I M. B., part II.	Anatomy Physiology	} Rs. 50 for each of the subjects.
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II M. B., part II.	Hygiene, Pathology and Ophthalmology,	
Final M. B., Part I.	Medical Jurisprudence ...	15.
Final M. B., Part II.	Medicine, Surgery and Midwifery.	30 for each subject.

Students who do not belong to the Madras Presidency should pay fees at twice the above rates.

Preference in selection for admission to this College will be given to candidates who hold Madras L. M. P. Diploma.

The courses will commence in July of every year but no separate classes will be held for these candidates and they will have to take their courses along with M. B. B. S. students".

Further particulars regarding date of submission of application for admission etc., can be obtained from the Principal, Medical College, Madras direct.

GLEANINGS FROM MEDICAL PRESS

SURGERY

High Spinal Anesthesia.—B. R. N. Johnson in the *British Journal of Anaesthesia*, April, 1931, states that the indications for high spinal anesthesia are undoubtedly debatable and largely a matter of opinion and experience. The person with chronic bronchitis is surely subjected to grave risk by having the intercostal muscles paralyzed for two hours because this causes diminished air entry to the lungs. The formation of areas of collapsed lung must follow, and thus the dreaded bronchopneumonia is encouraged. An anterior abdominal wall block followed by an anterior splanchnic block when the abdomen is open is less likely to intensify the pulmonary disease. On the other hand, a case of recently healed pulmonary tuberculosis with no moist sounds in the chest would be one most deserving of a high spinal rather than an inhalation anesthetic. Those patients whose cardiovascular system do not warrant a deep general anesthetic, the diabetic patients and those with renal disease, are also surely cases in which high spinal anesthesia is indicated. Another great class of cases which calls for spinal anesthesia is that class in which prolonged surgical manipulations are to be undertaken, or when the surgical procedure is going to give rise to much shock—for undoubtedly the anesthetic solution protects the patient from shock to a marked degree. The muscular relaxation obtained is also remarkable and so cases of large abdominal tumors, when the surgeon is going to require all the relaxation possible, are most suitable for high spinal anesthesia. There are also the few cases—highly toxic patients, whose acute surgical conditions have become chronic and in whom general anesthesia or large doses of procain hydrochlorid would probably be fatal—in which this method of anesthesia can be, and has been

more than once in the author's series of cases, a life-saving measure.—(*Anesthesia & Analgesia*).—*American Medicine*.

Sclerosing solution for cysts. Cutler and Zollinger (Boston, Mass.) recommend a modification of Carnoy's solution as a sclerosing agent in the treatment of cysts and fistula. The formula is: Absolute alcohol, 6 c. cm., Chloroform 3 c. cm., glacial acetic acid, 1 c. cm.; ferric chloride 1.0 gm. This solution has the property of moderate penetration, it causes rapid fixation of the living cells, and is an excellent haemostatic. The solution is applied on cotton or gauze to the walls of the cyst or injected into the fistula or sinus. In a short time local ambulatory treatment can be carried out and the patient is spared the necessity of a surgical operation. Disfiguring scars are rare. A number of cases are described of gliomatous cysts, cervical fistula, and pilonidal sinuses successfully treated in this way. *Prescriber*.

The Treatment of Late Acute Intestinal Obstruction. By Robert Elman, Surg. Gyn. & Obst. (1933) 56: 175 (February).

The Use of Hypertonic Saline.—The physiologic effect of hypertonic salt solution in intestinal obstruction is now known to be quite different. It is a powerful stimulant of intestinal peristalsis and is an efficient way of promoting evacuation of a paralyzed distended bowel which, after enterostomy, will not drain sufficiently. Without an outlet for the obstructing contents its use, of course, aggravates the distention quite as much as does the use of purgatives.

In the administration of parenteral fluids the author has found the modified Ringer's solution, as made up by Hartman, of great value. It is a physiological, buffered solution containing sodium lactate in addition to calcium, potassium, and sodium chloride.

Conservative Treatment.—All patients with intestinal obstruction receive several liters of combined solution at once. Gastric lavage is carried out. There is no objection in most cases to the use of a simple low enema to assist in ascertaining whether an obstruction is actually present. (The use of morphia occasionally relaxes a patient sufficiently to allow the obstruction to subside.) One should not in general delay operation more than a few hours in the expectation of any spontaneous release of the obstruction which, of course, does sometimes occur.

The cause of death in untreated, complete, high obstruction (stomach and duodenum) is probably a physiochemical one, due to

depletion of water and salts from the blood into the vomitus or obstructing contents. The resulting dehydration can explain all of the so-called "toxic" symptoms. Treatment with a modified Ringer's solution effectively restores the blood to normal, improves symptoms, and permits adequate surgical treatment without great risk.

The cause of death in low intestinal obstruction (ileum and colon) is probably different, but as yet there is little convincing evidence that a "toxemia" is present. Distention plays a prominent role, and it is believed that sudden release of distention may be an important factor in the fatal outcome. The operative treatment must, therefore, be confined in late cases to gradual decompression of the distended intestine, the actual removal of the strangulated intestine being left for later stage.—C. R. *The Journal of Philippine Islands Medical Association*.

Surgical Applications of the Schilling Differential Blood Count.—

J. S. Harter and C. Lyons (*Surgery, Gynecology and Obstetrics*, 56: 182, February, 1933) have used the Schilling differential blood count in the study of surgical infections. The complete interpretation of the Schilling hemogram takes account of the distribution of the lymphocytes, monocytes, eosinophils and basophils as well as of the types of neutrophils. An increase of the juvenile and band or staff forms of the neutrophils, usually associated with a decrease of lymphocytes and monocytes, is designated a "shift to the left"; an increase in the mature neutrophils usually associated with a return of lymphocytes and monocytes to normal or above is designated as a "shift to the right." In surgical infections an increasing shift to the left with a rising white blood cell count occurs if the patient shows an adequate response to the increased demand for white blood cells; an increasing shift to the left with a falling leucocyte count indicates an inability to respond to this demand. In subsiding infection there is a shift to the right which may be associated with a temporary leucocytosis. Low lymphocyte counts have been found to occur especially in advancing acute infections in patients with poor resistance; normal or high lymphocyte counts in association with a shift to the left is an indication of good resistance; it is seen in cases of localized sepsis or chronic infection. The authors have found that the Schilling differential count can be readily adapted for routine laboratory use, and is of more value than the usual differential count for studying the progress of a patient

with an infection. They regard the Schilling hemogram as the simplest classification of neutrophiles giving an adequate picture of the bone marrow response. —*Med. Times & Long Island Medical Journal*.

Full-Thickness Skin Graft. J. H. Garlock (*Annals of Surgery*, 97: 259, February, 1933) emphasizes the value of the full-thickness skin graft in certain types of surgical defects, especially to cover defects in the popliteal space, the front of the elbow, the forearm and leg, and both aspects of the hand. Even in surgery of the extremities, there are minor contraindications to its use. It should not be placed over bare bone or tendon. In the selection and placing of the graft there are certain factors to be considered. These are future shrinkage, changes in color, the development of heavy scars at the edges, and the growth of hair. In regard to shrinkage, the author has found that when the graft takes perfectly and the loss of surface epithelium is minimum, shrinkage will not be greater than with a pedunculated flap of similar size. In certain sites allowance must be made for shrinkage to preserve function. Changes in color (pigmentation) are slight if there is little loss of surface epithelium; the graft may have a "shiny" appearance, which must be considered when it is used for face defects. A heavy scar may develop along the edges of the graft; the author is not able to explain this development, nor to foretell in what cases it will take place. The majority of hair follicles in a successful graft will grow hair, hence, the graft must be non-hair-bearing skin, unless used in localities where hair is desired. The author has found that in practically every case where a full-thickness skin graft is used, a thin layer of fatty tissue is deposited beneath the graft and a previously depressed area fills up and rises to the level of the surrounding skin. The full-thickness skin graft, the author believes, should be used to cover fresh surgical defects only and not granulating wounds. In the technic of the operation, the following details are of importance: Complete excision of scar tissue, rigid asepsis, complete hemostasis, avoidance of any trauma to the graft, application of firm, even pressure over the grafted area, complete fixation of the part by the use of appropriate splints. —*Med. Times and Long Island Med. Journal*.

Local Anesthesia Dangers. —P. Guillaume warns that preparations of suprarenal extract should be used with caution for local anaesthesia as they are apt to give rise to circumscribed necrotic

changes. This is particularly common in the hands, but if detected in time the morbid process may be checked by the application of super-heated air. Even subcutaneous injections of normal saline if combined with suprarenal preparations are not free from danger of producing gangrene due to the practical cutting-off of the circulation by the latter. In situations where the blood-supply is naturally less than in others as in the skin, Guillaume first injects the saline subcutaneously, and then the suprarenal solution into the muscular tissues a little distance away. On the whole however, Guillaume considers the risks of suprarenal preparations outweigh their advantages and he prefers not to use them at all in local anaesthesia. (*Paris: La Bulletin Medical.*)—*Medical World*.

A Narcotic for short operations.—K. Specht (*Zentralbl. f. Chir.*, February 4th, 1933, p. 242) describes the use of a new preparation for the production of narcosis of short duration, suitable for emergency operations, punctures, incisions, reductions of fractures and dislocations, urological examinations, curetting, and investigations ordinarily involving pain. This substance, sodium evipan, is the sodium salt of *n*-methyl-cyclo-hexanyl-methyl-malonylurea, and is obtainable in 10 per cent. solution ready for intravenous injection. Experiments on animals have shown it to be without apparent toxic effects. No special preparation of the patient is necessary. The intravenous dose varies according to the age and weight from 0.08 c.cm. for the age of 75 to 0.16 c.cm. for children between 10 and 15 per kilogram body weight; the maximum allowable dose is 10 c.cm. The first 4 c.cm. are injected at the rate of 1 c.cm. in each fifteen seconds and the remainder at 1 c.cm. per ten seconds. The rate of injection is important, as is the case with all intravenous narcotics. Narcosis follows rapidly after the injection and may commence during it. Slight tremors of the muscles are sometimes seen, but never anything approaching convulsions. The narcosis should always be quite light, and lasts, according to the author, for from five to fifteen minutes. In about 33 per cent. of cases the patient falls into a further sleep lasting fifteen to thirty minutes after the period of true narcosis. As in the case of avertin older subjects are, weight for weight, more susceptible than young ones. There are no unpleasant after-effects such as nausea, weakness, headache, etc. If longer unconsciousness is required the narcotic may be used as a method of induction, and the anaesthesia be continued by ether or ethyl chloride. —*B.M.J.*

Diagnosis of cysto-pyelitis. H. Pollitzer draws attention to the frequency of wrong diagnoses of cysto-pyelitis. The pain and rigidity of the abdomen often lead to its being mistaken for appendicitis, an operation being actually performed in one case while Pollitzer was able to intervene in time to prevent it in another. Then in a third patient who underwent a cholecystectomy operation uselessly, the continued pyrexia of the pyelitis was attributed to enteric fever. Pollitzer suggests that the common occurrence of cysto-pyelitis in young women after exposure to cold or damp with the acute pyrexia, splenic enlargement, localised lumbar pain, and the presence of herpes, together with the urinary findings should obviate any mistakes. He finds that the most effective treatment is 5 c.c. of a 20 per cent. solution of hexamine intravenously on alternate days. (*Berlin: Medizinische Klinik, Medical World.*)

Dressings of Inguinal Operative Wounds in Infants. By Edmund Butler, M.D., San Francisco. Dressing of the operative wound following the repair of an inguinal hernia in an infant is always a problem. It is practically impossible to maintain a gauze dressing in place without it becoming contaminated.

The following dressing is, I believe, superior to most dressings. The edges of the skin wound are approximated by small Michel clips which are first dipped in compound tincture of benzoin. The clips are placed with just enough pressure to approximate the skin edges. The wound and clips are now coated with a thick, gummy layer of compound tincture of benzoin. This gummy consistency is obtained by allowing the compound tincture to evaporate in an open container until a molasses consistency is reached.

The nurses are instructed to paint over this layer of compound tincture of benzoin with the ordinary compound tincture of benzoin daily. On the fifth or sixth day the dressing is loosened with alcohol, and the clips are removed. It is usual to find a well-healed, firm scar, without any evidence of infection. (*California and Western Medicine.*)

Bone Cancer Successfully Treated With Arsenic. A new case of successful treatment by means of colloidal arsenic of a patient suffering from cancer of the bone is reported in the *Canadian Medical Association Journal*.

The report is by Dr. A. C. Hendrick, Toronto surgeon, and Dr. E. F. Burton, professor of physics at the University of Toronto. The statement follows an announcement by the same investigator

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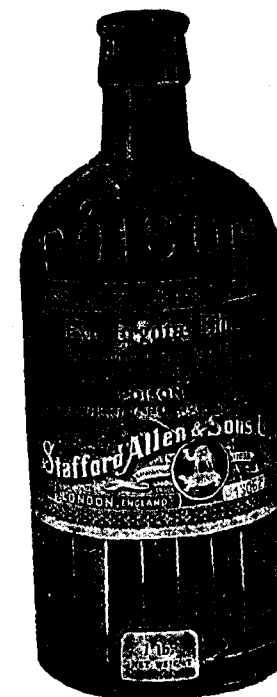
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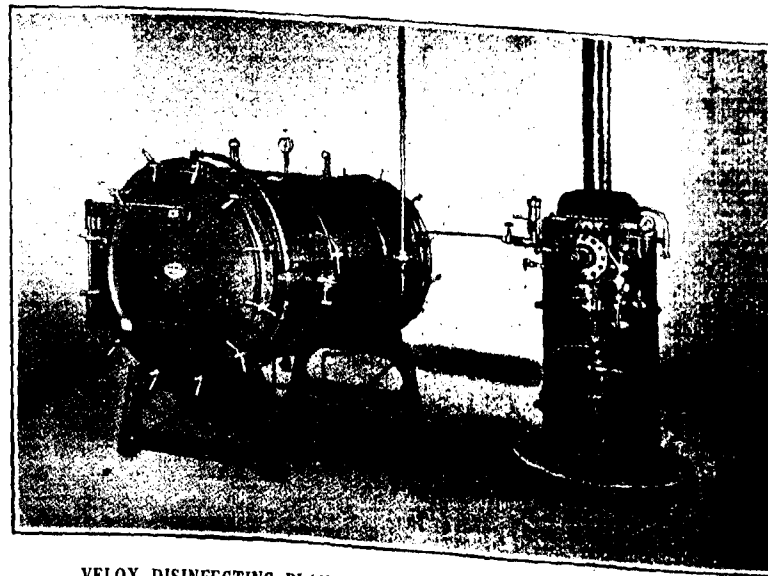
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AUG. '33]

GLEANINGS FROM MEDICAL PRESS

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in 1931 to the effect that they had successfully treated four persons affected with bone tumor by means of injections of a colloidal solution of arsenic metal.

Details of the latest case are contained in a two page history, which include x-ray photographs depicting the bone repair following the injections.

The patient was a married woman 22 years of age, affected with a cancerous condition of the thigh above the knee. She was first seen in November, 1930, when both bones and muscles were involved. High voltage x-ray treatment was commenced, but the condition did not improve. The thigh bone finally fractured.

Radiation was discontinued in July, 1931, when the first doses of arsenic were given. An x-ray picture the following October showed that the fracture had re-united. Three months later, the tumor had receded still more, and repair of the limb with new bone line became apparent on the x-ray plates.

Examination of the patient's lungs last November showed that no secondary cancerous growths had occurred. This fact is considered of importance in view of the rapid course which the disease ordinarily runs. Usually, fragments of a bone sarcoma growth are distributed by the blood stream and produce tumors in other parts of the body. The report says of the patient's present condition:

"She is in good health, free from pain, and is carrying on her usual household duties."

Of the four cases treated in 1931, two are still alive.

Dr. G. E. Richards, associate in radiology at the University of Toronto, who has been in close touch with the work since its inception, made this comment:

It must be remembered that cases of bone sarcoma have also been cured in the past by means of surgery, x-rays and radium. This new case with arsenic treatment is of definite interest because for the first time the results are well authenticated and fully reported.

"Too many conclusions, however, should not be drawn from a single case, but if the arsenic treatment does no more than relieve pain, and eliminate the need for drugs, it will still be a great boon. The final test will come when there are many more cases, all carefully controlled and thoroughly checked, just as is necessary with any other new clinical treatment."

The indications are that colloidal arsenic will find its greatest use in cases of advanced bone sarcoma. The colloidal solution is

now being given a large scale trial in the Toronto general hospital, from which later developments may be expected. *Science News Letter*, February 18, 1933. *Thru' Archives of Physical Therapy X-Ray, Radium*.

MEDICINE AND THERAPEUTICS

The Common Cold. By A. J. Waring, Jour. Med. Assoc. Georgia (January, 1933).

The so-called common cold is the most prevalent disease known to mankind. It is equally dreaded by the mother of the newborn babe and the president of a large corporation. In 40 to 50 per cent of transmissions a filterable virus has produced typical contagious colds in ape and man. Many experiments point to this virus as a precursor or an activator of pathogenic germs, so that the cause of colds may be dangerous only because they pave the way for the pathogenic germs to become virulent.

The following suggestions for cold prevention in childhood are made:

1. See that the child's nose, throat, and accessory cavities are not pathological.
2. Diagnose early and, if possible, remedy allergic manifestations.
3. Always avoid exposure to infection of mucous membranes and, if exposed, use silver salts intranasally for three days.
4. See that the child's food, clothing, and rest are suitable, that he has abundant fresh air, that he is never anemic, and that his skin reacts quickly to heat and cold. Let him avoid marked chilling and fatigue. In other words, if he is not a normal child physically and psychically, work over him and with him sympathetically until he becomes one. It seems that the very best that a pediatrician can strive for is to see that, at the age of puberty, the boy or girl leaving his office for the last time, leaves it with a courageous mind and a vigorous body. To attain that object the avoidance or the prompt cure of the common cold is a strategic move of inestimable value.—A. B. M. S.

1. **Diagnosis of Pernicious Anæmia.** An increase in size of the average erythrocyte, best indicated in terms of volume, is the most constant and characteristic finding in the blood in the presence of pernicious anæmia. An increased volume index was found in every patient in this series.

2. Free hydrochloric acid is seldom, if ever, found in the gastric contents of a patient with idiopathic pernicious anæmia. An achlorhydria was demonstrated in every one of the 152 patients in this series.

3. The mean corpuscular volume may be quite large even with a relatively high count; therefore it does not vary with the red cell count.

4. If the deficiency which is responsible for the disease is adequately supplied, the cells return to normal size. The first indication of a relapse or a lack of a sufficient quantity of the missing principle is an increase in the volume of the red cells.

5. Macrocytosis may occur in the presence of conditions other than pernicious anæmia but was found only 9 times in a study of 411 patients and normal individuals.

6. Achlorhydria is a frequent finding in various clinical conditions especially in the age period in which pernicious anæmia is most common.

7. A combination of macrocytosis of the erythrocytes and achlorhydria is seldom if ever found, except in the presence of pernicious anæmia.

8. The finding of an absence of free hydrochloric acid on gastric analysis and an increased mean corpuscular volume or plus volume index is a practically constant finding and one that is necessary for the diagnosis of active pernicious anæmia; if demonstrated, it is almost pathognomonic of the disease.—Russell L. Haden, M.D., J. A. M. A., Jan. 16, '32.

The Hazards of Intraperitoneal Injections.—Samuel F. Ravenel, Greensboro, N. C. (*Journal A. M. A.*, Feb. 18, 1933), reports five cases illustrating some of the dangers encountered in using the intraperitoneal injections. They occurred in the comparatively limited experience of one man during the course of nine years. Abdominal distention is an absolute contraindication to intraperitoneal injection. The introduction of unmatched or incompatible blood into the peritoneal cavity is dangerous and unwarranted. Cross agglutination before each such transfusion is necessary, irrespective of whether or not the same donor previously has been used with success. In premature or young infants, intraperitoneal injection in the midline below the umbilicus may produce serious hæmorrhage by wounding the "obliterated hypogastric artery." Intraperitoneal injection, while affording the most satisfactory method of administering fluids parenterally to infants, is not

entirely devoid of danger. In one of the reported cases perforation of the intestine occurred during intraperitoneal injection of saline solution. In two instances, incompatible blood administered intraperitoneally produced violent, local and general reactions. In two cases, serious hæmorrhage resulted from puncture of the "obliterated" hypogastric artery during the course of intraperitoneal injections in young infants.

Treatment of Tuberculosis with oily suspensions of Gold.

By P. Dumas and H. Mollard. Communication to the International Tuberculosis Conference at the Hague, 6th-9th September, 1932.

For the last six years we have been occupied in studying the treatment of tuberculosis with gold. During the last eighteen months we have been led to investigate in particular the use of gold compounds suspended in oil. What was the starting point of our trials and what were their first results?

Impressed by the numerous and often serious secondary effects observed by our predecessors in the field of chrysotherapy, we first of all commenced with the administration of minute, almost homeopathic doses. We believed that the danger of gold salts consisted in their toxic effect on the organism.

We found however, that the small doses gave us only a very small percentage (12%) of radiologically demonstrable improvement and the secondary complications of the treatment remained frequent. We then experimented with the administration of higher doses, even giving as much as 1 gramme per week. We observed two facts.

Firstly, the frequency of improvement in the patients was much increased. The number of cases developing toxic symptoms became neither more nor less numerous. (In both cases ca. 60%).

This study permitted us to draw two conclusions; the higher doses were incomparably more efficacious than the small doses. The secondary complications were independent of the dosage and were rather a sign of intolerance than of intoxication.

The problem, therefore, was to inject as large a dose as possible and at the same time to increase the tolerance of the organism. At this stage, on the advice of our colleague, Dr. Feldt, and by analogy with certain forms of antisyphilitic therapy, we conceived the idea of preparing oily suspensions of gold.

Theoretically oily suspensions have two advantages over aqueous solutions.

(i) *They are better tolerated by the patient* on account of the slow rate of absorption of the medicament, which must cross over two thresholds before reaching the blood, i. e., that of the oil and that of the muscle cells. Not only is it delivered drop by drop into the circulation, but between the time of making the injection and the moment when the last drops enter the organism a period of 4—8 days elapses (Heuck and Vonkennel). The organism is thus provided with a supply of the product which is absorbed very slowly. Thus there is no violent shock and the body gradually becomes accustomed to the preparation.

(ii) *The action of the suspended substance is prolonged.*—The injected material only accomplishes its voyage through the body little by little. When the first particles are being excreted in the urine and the fæces, other particles are still present in the muscle at the site of injection. The organism thus remains under the influence of the product as long as this metabolic process lasts. The action of the medicament is continuous instead of transitory.

On this theoretical basis we prepared a 20% solution of 'Solganal-B' (aurothioglucose) in almond oil, which we injected three times a week in almost constant doses. At first we gave three injections of 0.2 gramme of the gold compound, then three injections of 0.3 gramme, after which we continued to inject 0.4 gramme till the end of the course, i. e., 1.2 gramme per week until 8—10 grammes in all had been given.

To-day we are able to present the results of these three experiments:—

(i) *The method of injecting small doses in aqueous solution* produced a radiologically demonstrable improvement in 12% of cases, and secondary toxic effects were observed in 60%.

(ii) *Treatment with higher doses but still in aqueous solution* produced improvement in 52% of cases and slight or severe complications in 60%.

(iii) *Still larger doses but in oily suspension* produced rapid improvement in 60% of cases and slight secondary symptoms in 39%.

So much for quantitative results. Qualitatively we observed that with oily suspensions the success of treatment was more rapid and more often complete than formerly. More important still, any secondary symptoms observed were slight, transitory and in no case prevented continuation of treatment after a brief interruption.

Further, we would add that many cases who did not tolerate small doses in aqueous solution supported large doses of the oily

suspension without any signs of intolerance and with highly beneficial results.

Our experiments, therefore, completely confirmed the theory on which our researches were based. What practical conclusion can we draw from them? This method, which we have applied personally to a large number of patients, has two chief indications: it increases tolerance and is, therefore, particularly suitable for fragile patients who are highly susceptible to gold, and for patients who tolerate the aqueous solution badly. It enhances the action of the gold compound and is thus especially suitable for patients who are resistant to the ordinary forms of gold therapy.

PROCEEDINGS OF SOCIETIES ETC.

EDINBURGH OBSTETRICAL SOCIETY.

A meeting of this society was held on March 8th with Dr. James Young, the president, in the chair.

Oestrin for Secondary Amenorrhœa. Dr. W. F. T. Haultain read a paper on the clinical use of a preparation of oestrin in the treatment of functional secondary amenorrhœa, which was illustrated by the case records of 16 patients. *The preparation used was Progynon* and the cases on which treatment was exhibited were all cases of secondary amenorrhœa in which no definite cause, either general or pelvic, could be found to account for the onset of the condition. The majority of those women were nulliparous and when married were usually sterile, though in one of his cases a pregnancy had resulted after treatment. Of the cases whose history was given, 11 were cured, the ordinary menstrual habit returned after discontinuance of the treatment; 3 were difficult to assess accurately as though bleeding had occurred, the menstrual habit had not been regained on discontinuance of the treatment; in 2 cases no effect had been produced. Dr. Haultain said that *latterly he had been giving doses of 1000--10,000 M. U. of Progynon Ester* to patients who had not responded to the ordinary dosage orally or by injection and that in two such cases already he had got a satisfactory result. It was just possible that the two failures might react to the ester as it had not been tried in their cases as yet.

BOOK REVIEWS

The Medical Annual 1933.—A year book of treatment and practitioners index.—Edited by C. F. Coombs, M.D., F.R.C.P. (the late) and A. R. Short, M.D., B.S., B.Sc., F.R.C.S. Fifty first year. Pages civ plus 628. Illustrated. Price 20 sh. (John Wright & Sons, Ltd., Bristol).

This well known book which has been a regular annual feature for over fifty years appears under the cloud of one of its editor's death. All will regret the premature death of its senior editor Dr. C. F. Coombs, who for 14 years had had the general direction of the publication, and who for ten years personally contributed the articles on cardiac diseases. We know his place is difficult to fill but we wish the annual all success under its new editors.

The year under review has not seen any very striking discovery but a steady advance has been recorded in all branches of medical science. Enumeration of the contents of the annual would be impossible but a review of its main features would not be out of place.

A great deal of attention has been paid to the anæmias, either simple, or pernicious or those of infancy and pregnancy. The value of iron and copper are stressed. The chapter on anæsthesia is also very well written and the value of such substances as Avertin, Nembutal, Sodium Amytal, Sodium Bromide and Carbon Dioxide are thoroughly discussed. A review of the main features of the new B. P. is presented. In the chapter on diabetes the question of the heredity factor and the value of the high carbohydrate and lower fat diet is well discussed. In the section on labour the value of inhalation anæsthetics and analgesias are given. In the section on pneumonia we learn of the use of artificial pneumothorax in the treatment of pneumonia and of the use of Felton's serum. The section on renal disease will be found very useful. The two most modern methods of treating retinal detachment, by Diathermy and by multiple trephining are also described at great length. The subject of rheumatism and arthritis which is at present before the medical eye is also treated exhaustively. To the surgeon there are various interesting sections especially those on cancer, thyroid surgery, kidney surgery etc. To us in the tropics, dysentery, leprosy, filariasis and malaria are dealt with in detail by Sir Leonard Rogers. Mention is made of the treatment of malaria by Atebrin. Such are samples of the subjects treated in this year's annual.

To the busy medical practitioner who has to rely on one volume for all knowledge regarding medical progress and to any one who has no time to go through the pages of Medical Journals, the present Medical Annual is an ideal book—cheap, well printed, profusely illustrated and containing a mine of information. We would urge every practitioner in India to buy this volume and study it.

The Science of Signs and Symptoms.—By R. J. S. McDowell, D.Sc., M.B., F.R.C.P. (Edin.) 1933. 2nd edition. 440 pages illustrated. Price 21 sh. net. [William Heinemann (Medical books) Ltd.]

If medicine and surgery are to progress, some definite attempt should be made to bring clinical work and the sciences closer together. It is essential to know how signs and symptoms are produced. It is only then that we can diagnose and treat properly. Dr. McDowell has attempted to write such a book. He has tried to enable medical men to have a more intimate knowledge of the scientific side of medicine. A perusal of his book will make the reader think about many things which he has hitherto taken for granted. Such important subjects as consciousness, muscle tone, equilibrium, speech, sight, blood pressure, cyanosis, oedema, allergy, and acid-base equilibrium are discussed in a manner such as is not found in any modern text book of physiology or medicine. The bibliography at the end of the book is extensive and exhaustive. The printing and general get up of the book is very attractive. We have no hesitation in recommending it to all general practitioners.

Royapuram Medico:—A Quarterly Medical Journal of the Royapuram Medical School, Madras. Annual Subscription Rs. 2/- Single copy As. 8/-

This is a valuable addition to the rapidly increasing number of medical journals in India in general and Madras in particular within recent years. Published as it is under official auspices and edited by a Committee of Medical experts of whom Lt. Col V. Mahadevan, I.M.S. is the President, the Journal bids fair to rank as one among the foremost of Medical journals in this country in the long run. Vol. I No. 2 of this journal which we are reviewing contains an excellent article from the pen of the distinguished President of the Editorial Committee himself while the Editorial note begins aptly with a thanksgiving to all con-

cerned in getting the 'Five year course' scheme sanctioned for the I. M. P. Diploma, which has been inaugurated in the Royapuram Medical School from July '33. The journal is illustrated and a few pages are devoted to fun and frolic, evidently to keep the student population for whom the journal is chiefly intended, in good humour. We would, however, wish that more case-reports appear in the journal and special clinical lectures delivered, if any, published therein. By way of suggestion, we may point out that an incorporation of the Hospital Gazette may not be out of place. The get-up and printing are nice and we take this opportunity of congratulating the promoters of the journal on their initial success. We wish the journal a long and prosperous career.

Tropical Hygiene for Europeans and Indians:—By the Late Sir Pardey Lukis, K.C.S.I., and Col. R. J. Blackham, C.B., C.M.G., C.I.E., D.S.O., M.D., M.R.C.P.E., F.R.F.P.S., D.P.H. Revised and enlarged by Lt. Col. A. D. Stewart, M.B., F.R.C.S.E., D.P.H., D.T.M.H., I.M.S., Director, All-India Institute of Hygiene and Public Health, Calcutta, 4th edition, 1931, 441 pages, illustrated and with charts. Published by Thacker, Spink & Co., Calcutta, Price Rs. 5.

At the request of the St. John Ambulance Association, Indian Council, Lt. Col. Stewart, has revised, Lukis and Blackham's well-known book on "Tropical Hygiene". The book was originally written to the ordinary resident in the tropics and particularly in India, in a manner which would not be too technical in outlook or language, but which would arouse in the public the interest and knowledge in public health matters which is so necessary for the well being of the individual and the progress of the state. How well this book has succeeded can only be learnt by its perusal. The present edition is certainly an improvement on the three previous editions. Among new chapters may be mentioned those on "Maternity and Child Welfare Work," "School Hygiene," "Personal Hygiene" and "The Sanitation of Melas, Fairs, Festivals and Camps." "Sprue", "Filariasis", "Relapsing fever", "Leprosy" etc., are some of the new diseases discussed in the chapters on communicable diseases. The chapter on Food and Nutrition is also very interesting and contains an excellent diagrammatic illustration of a "square" or "balanced" diet. The other chapters such as those on "clothing," "water", "disposal of

refuse" are also very interesting. The book is very well illustrated. It should form a very useful handbook of Tropical Hygiene".

Hygiene for Nurses:—By John, Guy, M.D., D.P.H., &c., and G. J. I. Linklater, O.B.E., M.D., D.P.H., &c., 1933, 2nd edition, pp. 244. Edinburgh: E. and S. Livingstone. Publishers: Messrs Butterworth & Co., (India) Ltd., P. O. Box 207, Calcutta. Price Rs. 3-12-0.

This little book is specially written for the nurse in practice and is based on the syllabus issued by the General Nursing Council. It provides an adequate knowledge of hygiene in a practical form. The new second edition has been revised and brought up-to-date. Certain chapters have undergone re-arrangement, and the authors have successfully stressed the value of hygiene of the individual as compared with communal. The style is simple and language easy, which render the book to be confidently recommended to the nursing profession.

Manual of Hygiene and Public Health:—By Rai Bahadur Jahor Lal Das, D.P.H., Asst. Director of Public Health in Bihar and Orissa. With an introduction by Lt. Col. W. C. Ross, M.B., D.P.H., I.M.S., formerly Director of Public Health, Bihar and Orissa.—3rd edition, 1932, 661, pages, illustrated. Bihar and Messrs Butterworth & Co. (India) Ltd., Calcutta. Price Rs. 3-8-0.

This popular text book on Hygiene and Public Health is in its third edition. The manual has been revised, and more practical details added so as to meet the requirements of students of medicine and public health. Mention may be made of a few chapters that are very instructive and will be found very useful by those engaged in public health propaganda, such as, Maternity and Child Welfare, village sanitation and mass education, &c. The manual is well written, and we have no hesitation in recommending this book as a comprehensive and complete manual for the use of public health officers and medical students.

The Treatise on Birth Control.—By an anonymous eminent doctor, and published by Mrs. A. Mathews, Contraception Inquiry Office, Kuthiathode, Travancore. Pages 179, with illustrations. Price Rs. 2/-.

The book treats of the Anatomy and physiology of sexual organs with illustrations. One chapter has been devoted to

surgical methods of contraception and two other chapters deal with mechanical and therapeutic methods. The book contains very useful information. It is written in a simple and nontechnical style. It is easily understandable by the lay public. We recommend the book to the public who want information about contraception methods to control birth.—U. R.

PREPARATIONS AND INVENTIONS

Atebrin-Plasmoquine.—Messrs. Haverø Trading Company, Ltd., Calcutta, the sole importers of the above well-known antimalarial drugs, are glad to announce that on account of the steadily increasing demand for plasmoquine, they have been able to reduce the prices of the current trade packings of all plasmoquine preparations by 25—30 per cent.

The reduction of Atebrin prices is, however, less striking as the company continues to pay a 30 % customs duty for this drug. A list showing the new prices can be had on request.

Ferradol (a superior tonic):—Ferradol is a new vitamin preparation containing both manganese and iron in a very palatable and diastatically active malt vehicle which Messrs. Parke, Davis & Co. have just introduced. The vitamins A, B, and D are all represented in generous quantity in this formula. The vitamin A content of Ferradol is obtained by the inclusion of halibut liver oil which is of such high potency that the small quantity required does not impair the pleasant flavour of this preparation. Vitamin B value is provided by the content, per ounce, of 25 grs. of concentrated biologically standardised vitamin B extract from wheat germ and irradol, P. D. & Co. has been included in sufficient amount to assure a vitamin D potency of 5 D.

Thus Ferradol provides the fat soluble vitamins, A and D in larger amounts than a high grade cod liver oil, the growth stimulating vitamin B in sufficient quantity, the anti-anaemic effects of iron and manganese and the nutritive and diastatic value of malt.

The malt extract used in Ferradol is nutritious and is an aid to starch digestion. It is made by the vacuum process which protects its enzymatic activity from injury by heat. As a vehicle for the vitamins contained malt extract is ideal. The flavour of the finished product is very pleasing and is, therefore, logically indicated for children who are under weight, have little appetite or who have not regained normal vitality after some acute infection. Also for adults for the same conditions and during pregnancy and lactation or other periods of stress. A tablespoonful added to the 24 hours supply of the baby's formula will ensure an abundant

supply of vitamins A, B and D, will protect against secondary anaemia, and has nutritive value equivalent to approximately 3 ozs. of whole milk.

Ferradol supplies 4 calories per gramme or 48 calories per fluid ounce.

Messrs. Parke, Davis & Co. offer this product in 1 lb. cylindrical glass jars.

NOTICE

ALL INDIA MEDICAL LICENTIATES ASSOCIATION. ANNUAL CONFERENCE—BOMBAY SESSION

A general body meeting of all the Licentiates of Bombay was held at Dr. U. B. Narayanrao's residence on 9th July at 4 p. m. Dr. Narayanrao, who presided, explained the plan of work to be followed in connection with the ensuing Conference during Xmas week, and appealed to those present to unite and co-operate to make the session a success. The following Office Bearers were then elected:—Dr. U. B. Narayanrao, Chairman of the Reception Committee; Dr. M. N. Talati, General and Publicity Secretary; Dr. A. D. Mastakar, Secretary, Finance Committee; Dr. Joshi Mirajwala, Secretary, Exhibition Committee; Dr. M. V. Regde, Secretary, Entertainment Committee; Dr. U. A. Rao, Secretary, Scientific Committee; Dr. B. M. Talati, Secretary, Accommodation Committee; Dr. S. N. Ganti, Secretary, Suburban Committee.

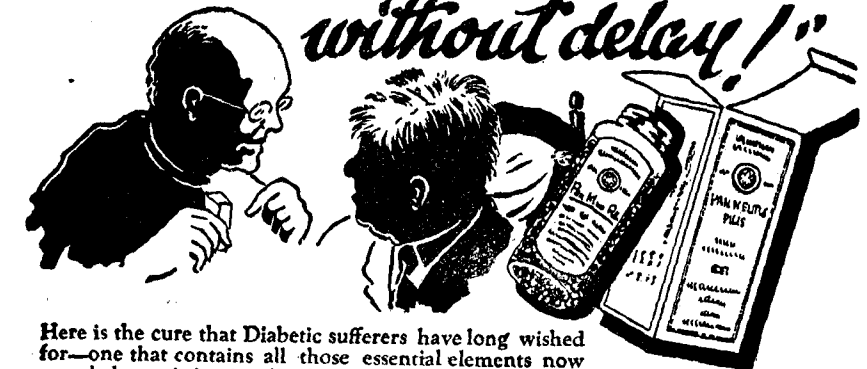
It was also resolved to send appeals to all the Licentiates of the Presidency to enlist themselves as Members of the Reception Committee, the fees being fixed at Rs. 5, and 10, and over. About four hundred rupees were subscribed on the spot. The meeting then terminated with a vote of thanks to the chair.

CORRIGENDA

In page 471, line 11 of the June '33 issue of the "Antiseptic", please read T. C. C. O. for E. C. C. O. This irritant was in vogue at the time, (c. f. cancrum oris in Kala-azar) and used to be injected to produce an aseptic abscess, thus inducing continued phagocytosis.

In the last paragraph of page 288, line 36, Vol. XXX, No. IV of the "Antiseptic", instead of 'Stovarsol is a French preparation' please read "Stovarsol is a British product, manufactured by Messrs. May & Baker, London, for the British Empire."

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