

The Antiseptic

A Monthly Medical Journal

EDITED BY

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VOLUME XVI.

JANUARY TO DECEMBER 1919.



Madras :

PRINTED BY MESSRS. R. VENKATESHWAR & CO.,
AT THE ANANDA PRESS, AND PUBLISHED BY THE PROPRIETOR,
RAO SAHIB DR. U. RAMA RAU.

1920.

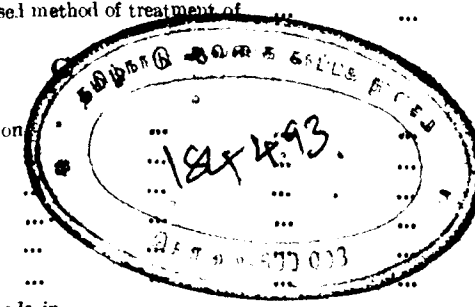
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Symptoms and Signs. The disease is highly contagious and it spreads with remarkable rapidity as the incubation period is remarkably short and rarely exceeds 46 hours. No age is exempt, though a report from Germany states that people under thirty years of age are more liable to fall victims. This was ascribed to a survival immunity in the elder generation, the survivors from the last great pandemic. The onset of the disease is rapid and sudden with high fever, and other phenomena such as rigors, headache, pain all over the body, especially in the lower part of the back, and sickness. This disease can be divided into three types: (1) Respiratory, (2) Nervous and (3) Gastro-intestinal. In the Respiratory type, the disease starts, in mild cases, with cold in the nose, headache, slight fever and other symptoms characteristic of an acute catarrhal fever, with perhaps more prostration and weakness than usual. In some other cases, bronchitis occurs, soon after the preliminary cold, and so there occur high fever, delirium and much prostration. And in the graver type of this Respiratory variety of influenza, bronchitis, which is thus set up, soon leads on to pneumonia and its complications. In the Nervous form of the disease, no catarrhal symptoms are observed but there are high fever, delirium (from mild delirium to maniacal violence), severe headache, pain in the joints and profound prostration. Such complications as hemiplegia, meningitis, peripheral neuritis, are said to arise in the course of this nervous variety. In the Gastro-intestinal variety, nausea and vomiting followed by profuse diarrhoea and collapse, are common. The motion is peculiar—watery motions with flaky moss-like substances floating in it. There is not much abdominal pain attending the diarrhoea.

Regarding the action of the *Heart* during the recent epidemic, it was observed that the heart's action was slow, when compared with the temperature, except when there was pneumonic complication, when the pulse was naturally fast and small. In the blood of patients suffering from this epidemic, no characteristic changes were observed in the red blood corpuscles. Leucopenia was present in grave cases of pneumonic types of this disease.

Complications. Many complications are said to result from this affection. But in the recent epidemic that visited us may be mentioned the following:—herpes, otitis media, hæmorrhage from the bowel, nose and lungs, diffuse erythema and purpura, orchitis and kidney affections.

Prophylaxis. This is the most important factor in preventing the spread of the disease. Since, as far as is known, the influenza germ requires the human respiratory tract or human blood in order to exist, and dies out at once if deprived of it, and since it is conveyed directly from person to person by the air we breathe, it follows that a close atmosphere, close human contact, and overcrowding are favourable to the development and spread of influenza, and that open and fresh air and absence of close associa-

tion of human beings will stop its spread. It is thus a disease of crowded communities, of cities, of railway and tram riders, of church, school and theatre-goers; of stuffy living rooms and bed rooms. Influenza in cities should be a notifiable disease. Isolation of patients suffering from influenza seems to me the only best prophylactic measure. Old people and young children should be guarded against all possible sources of infection. The secretions, nasal and bronchial, should be guarded against and thoroughly disinfected. The people should take care to see that patients suffering from influenza did not cough in their faces. Many throat gargles and sprays are recommended as effective preventive measures, of which gargling the throat with Formalin and Glycerin or Eucalyptus Oil with some liquid base may be mentioned here. Irregularity of the bowels, disorders of stomach and slightest fever ought to be attended to at once, as a part of the prophylactic measure.

Treatment. It is well known to all of us that while those who could afford to rest during the attack and avoid exposure to extreme changes of temperature and exertion mostly recover, and quickly too; the poor, who have to win their daily bread and could not therefore afford to take rest till the fever has completely disappeared, or have suitable dietary and other conveniences, develop complications and succumb in large numbers. So from the outset the treatment ought to be supporting and the patient should be encouraged to live in fresh air and to take as much absolute rest as possible. Among the drugs that are said to be effective during the recent epidemic may be mentioned Aspirin, Tinct. of Iodine, Creosote, Ammonium Carbonate, Sodium Salicylate, Quinine, Cinnamon and other stimulating diaphoretics. Regarding the use of Aspirin in this epidemic, a note of grave danger attending its use was sounded by some of the medical men in this city and this note unnecessarily made the patients to place less confidence on their doctors who drugged them with it. I am sure we all know indications and contra-indications of Aspirin, that Aspirin is a heart-depressant and that the injudicious use of Aspirin in all cases of influenza with no regard to the stage and condition of the patient was attended with danger. In my opinion, Aspirin judiciously used in the first stage of the disease with high fever and violent headache and general pain, with no involvement of the lungs evidenced by cough and other physical signs, gives surprisingly good results. Aspirin in 5-grain doses every 3 hours brings down the temperature, cuts short the course of the attack in some cases and leaves the patient in a better condition. I have been using Aspirin along with a diaphoretic mixture containing, Liq. Amm. Acet, Pot. Citras, Amm. Carb. and Spt. Æther Nitrose, and this line of treatment has given me good results. But when the chest is involved in the second stage, Aspirin should be withheld and Sodium Salicylate in small doses of 5 grs. each is used in its place. Of course care should be taken to prescribe heart tonics such as Digitalis, Pituitrin, in the course of the case

for strengthening the heart consequent on Pneumonia or Broncho-Pneumonia. Tinct. of Iodine which is now-a-days a panacea for most of the diseases such as wounds, sores, plague, phthisis, mumps, etc., and Creosote (these two) are said to be specifics in the first and second stage, respectively, of the disease. In the beginning, i. e., in the feverish stage when no chest complaint is present, Iodine, in the form of Tinct. of Iodine m. i. in 3i of Chloroform water is recommended to be given every three hours. Together with this mixture, quinine pills, grs. iii, are to be given. If the patient is constipated, Mag. Sulph. or any other saline aperient ought to be included in the above mixture. But if the patient is seen in the more advanced stage when the chest is involved a prescription containing Creosote or Creosotal, Ammon Carb., Vin. Ipecac, Spirit Æth N. Cl. Tinct. Cinch. Co. is very useful. Regarding Quinine, there is not much to be said of its efficacy.

Regarding the Treatment of Complications. Regarding external application in cases of Pneumonia and Broncho-Pneumonia, hot fomentations with wheat bran, sand or application of Antiphlogistine over the chest gives great relief. Choleraic diarrhoea, which is very common, is very stubborn to treatment. Great care should be taken regarding the diet. Only Albumen water and Whey ought to be given. Astringents and Bismuth and Opiates can be given a fair trial.

* Regarding affection of ear, syringing gently with lukewarm boric lotion and treating with Sol. Hyd. Peroxide will suffice.

Bleeding from the bowels should be treated like the bleeding from the bowels of a typhoid patient. Calcium Lactate internally, perfect rest and injection of morphia are recommended.

Cardiac Asthenia, which is an after effect of Influenza, should be treated with Digitalis, Nux Vomica, and Tonics such as Iron, Strychnine, etc.

ADVANTAGES OF THE EARLY DIAGNOSIS AND TREATMENT OF SYPHILIS.

BY

G. ORVILLE SCOTT, M.D., *Captain, C.A.M.C.*

The idea of my paper this afternoon is to avoid theory; to evade the pathology, but to try and convey to you all the importance early diagnosis of syphilis. If I can impress this fact, and if every medical officer here regard any sore on the genitals as a specific unit proved otherwise, then we have expended our time to the greatest advantage and actually saved this afternoon thousands of dollars to the Government, increased the

efficiency of every unit in this area, and greatly helped to keep our overseas divisions up to fighting strength.

As you all know, the disease of syphilis is caused by the entrance into the tissues of the *Treponema pallidum*; its methods of entrance are in order of frequency: coitus with an infected person; contact other than sexual, with diseased individuals; congenital, and lastly, those we occasionally see where it is absolutely impossible to trace the mode of entrance, or connect them with a specific history in any way.

The incubation period is, beyond a doubt, very much shorter than many of us were led to believe a few years ago. I have personally examined many cases who developed a primary sore one week after contact, from which the *Treponema pallidum* could be obtained. Of course, in forming an opinion of incubation period, you must necessarily take into consideration the man's statement, and also his intelligence. - However, there are cases I know where it was a physical impossibility for the man to have had any contact with a member of the opposite sex for months previous. I cannot say what the maximum incubatory period is; it may be three or four, or more months. I am particularly dwelling on this subject as I see cases nearly every day in which the medical officer has been led astray, and temporarily put off the diagnosis. Men come to me, late in the primary stage, and often not until the disease becomes clinically generalized, with the same story; that is: "I reported to my medical officer the first day the sore appeared. He told me not to worry, as it was too early to develop any specific infection. Keep it well washed with any antiseptic, and it will soon disappear."

The man naturally labours under the faulty delusion that it is only a chafe, or was caused by uncleanness. The result is a false sense of security; meanwhile the chancre continues to develop, and the patient may not report again till the secondary rash appears. As for the chancres, they vary from the most innocent looking eruptions to the malignant phagadenic type. They are often, as not, multiple, and may be located anywhere on the body. I shall deal with those on the genitalia first. The most common site in order of frequency is in the sulcus; the roll of the prepuce; on the body of the penis; on the glans; on the scrotum, and intraurethraly. The commonest type of sore seen is the papulo-erosive. There is very little loss of tissue; the surface inflammation is practically negative; the base clean, with slight serous exudation, and induration is always present to a greater or less extent, this latter characteristic being the most diagnostic feature. Very frequently in the hospital, we find cases who have been under treatment for gonorrhoea developing a small indurated area on the mucous membrane of the roll of the prepuce. There has as yet been no loss of tissue; that would take several days longer.

Cases of this kind should receive most careful consideration. The patient should be sent to the laboratory, the mucous membrane over the indurated area denuded and a smear taken. Provided it be negative, the process should be repeated the following day and so on till you have absolutely satisfied yourself and are positive in your diagnosis. It will only be a matter of a very few days till the experienced syphilologist can make a diagnosis. The condition will, in all probability, develop into a typical small, papulo-erosive chancre, that will clear up in a week under proper systemic as well as local treatment.

In the primary stage of syphilis, the medical officer can look for only one other clinical diagnostic feature, *i. e.*, the lymphatic system. At the time of even the first appearance of a chancre, however insignificant it may appear, the inguinal gland will give you that typical shotty sensation on palpation. Following very rapidly on their appearance, the posterior cervicals will become involved; also the axillary and epitrochlear at a little later date. Personally, I place most diagnostic value on the shotty cervicals. To make a diagnosis of syphilis in its primary stage, we have the following to guide us: the sore, the lymphatic system. These are the only clinical evidences we have. But here the laboratory comes to our assistance with the invaluable dark ground smear. It is absolutely useless to a Wassermann test. The report, provided it is the patient's, will be negative, and will only mislead both the patient and his physician.

Provided the medical officer can appreciate what he can see and feel, and be familiar with the technique of the dark ground smear, or else have the assistance of a pathologist, there is absolutely no excuse in making a faulty diagnosis.

I have referred to the most common type of sore. The next in frequency is the papulo-ulcerative variety, in which there is considerable loss of tissue. The base is usually dirty, and the induration is marked. There is usually more surface inflammation; glandular involvement will be more pronounced but in the inguinal region only, occasionally the condition advancing to suppuration.

The third distinct type of chancre is the Phagadenic, which fortunately is comparatively rare, as compared with the above two. It is intensely malignant in type, and may involve a large area. It responds only very indifferently to local as well as systemic treatment, and if left untreated may cause a gangrene of the entire penis. I have had three cases in the past month that were admitted to the hospital just one week after the first appearance of the sore. In two of these cases the ventral surface of the glans, the entire prepuce, and the urethra, to the fossa navicularis, sloughed away. The third lost almost one half of the glans, and the ventral surface of the prepuce, but fortunately the urethra was not involved.

These, of course, are the more malignant type of phagadenic chancres. In any case of this type of sore, there is an inguinal adenitis, which may or may not suppurate. The cervical glands, in all types of chancre, on the genitals, retain their typical 'hotty' characteristics. It might be well to mention here that no caustic or antiseptic of any description should, under any condition, be placed on a sore before a positive diagnosis is made. The caustic would alter the appearance and characteristics while an antiseptic solution, not altering the clinical characteristics, would exclude the possibility of a positive dark ground finding. Extra-genital chancres may appear anywhere on the body. The most common sites are, in order of frequency, in the neighbourhood of the symphysis pubis, on the inner side of the thighs, on the lips or chin, on the fingers, and on the tongue. The types seen are the papulo-erosive or the papulo-ulcerative. Personally, I have never seen phagadenic chancre extra-genitally. The same general clinical picture is given, and, of course, the patient should receive the same routine treatment.

If primary syphilis be not early diagnosed and treated, it becomes rapidly clinically generalized; the average time being from three to six weeks. However, it may be longer or shorter. In this condition, of course, the diagnosis is comparatively easy, for, in addition to the chancre and glands, you have the skin and the mucous membranes to assist you. The chancre, provided it has received no local treatment, may have healed, remained stationary, or increased in size; this, of course, depending on the type of original sore. The glands will be practically identical on palpation, but a greater number will be involved. The skin will show a rash which, in the case of syphilis, is characterised by the following: wide and symmetrical distribution; presence of different types at the same time; absence of irritability; uniformly round in shape. The first cutaneous manifestation of generalized syphilis is the faint rose-coloured rash that appears on the trunk, the favourite site being the abdomen. In its earliest stage it is sometimes very difficult to detect. The appearance of the skin is best described as a mottling. The rash remains only a very short time, and will fade even without treatment. One injection of Salvarsan, or one of its many substitutes, will cause it to completely disappear in a few days. The second rash that appears is the maculo papular; the most common variety being the condition in which the macular characteristic predominates. It appears first on the abdomen and flexor surfaces of the upper extremities, but very rapidly extends over the entire trunk and arms. Its colour, while not pathognomonic, is fairly constant. It is first pinkish in hue, deepening in shade, and then gradually becoming brownish in appearance, and covered with a dry scaly surface. Where the papular variety predominates, the face is practically always involved, in addition to the trunk and extremities. The forehead, at the junction of the hair, is a favourite site; and, if

untreated, it rapidly spreads over the scalp and entire face. The papular skin condition is never seen alone. The papules appear to be superimposed on the macules. In colour, the same general characteristics as in the macular variety are seen, except that the shades are more pronounced; but the papules go on to desquamation in the same way. Where the papular characteristic of the rash predominates, the pigmentation persists for a very long time; we see many cases at the hospital where it has remained for months, even though the treatment has been intensive. In forming our conclusion on the aetiological factor of a rash, we must of course consider the acute exanthemata, and drug rashes. The history and concomitant symptoms, the absence of any marked pyrexia, coryza, or conjunctivitis, or gastric disturbances, should render the diagnosis comparatively easy.

The mucous membranes in this stage are also involved; the throat is always injected and the pharynx granular. This condition always appears to be present in conjunction with the cutaneous eruption.

Of greater diagnostic value, however, are the mucous patches, which are almost constantly seen when the rash on the body is well developed. The pillars, tonsils, uvula, soft palate, buccal, mucous membranes, and posterior wall of the pharynx, are covered to a greater or less extent with a thin, pearly, greyish membrane; also the tongue usually shows numerous small superficial ulcerations, covered with this same coloured membrane. Where it has been removed, it leaves a beefy-coloured, shallow ulceration. There is no pain connected with this condition, and the voice is frequently husky. About the anus and the fold of the scrotum will be very frequently seen condylomata. They are usually roughly circular in outline, heaped up, deep purplish in colour, and moist on the surface. About the anus they have a tendency to recur, and are sometimes diagnosed as hæmorrhoids. In the intratrigonal space, and on the scrotum, secondary syphilides are frequently seen. These are identical with the condylomata about the anus. If there still be any doubt about a diagnosis, the Wassermann test can now be applied with a reasonable expectation that it will show a very strongly positive reaction.

There are some individuals, I understand, who will never show a positive Wassermann at any stage, and others who will show a positive reaction a few days after the first appearance of the sore. But these, however, are the exception.

The laboratory substantiation one looks for is a positive dark ground smear in primary syphilis, and a positive Wassermann when the disease becomes clinically generalized.

Our statistics at Etchingham Hospital show that if a patient be admitted here in the early stages of primary syphilis, his average stay in hospital

would be twenty-one days. At the end of this period he has no open luetic lesions, and is therefore not a menace to his associates. He is discharged from the hospital to his unit, but is obliged to return here at stated intervals for the completion of his course, which would require thirty-six days, and thus would be available for a draft to France in fifty-seven days from the time he was first put under treatment.

On the other hand; if a patient be not admitted till he develop secondary lesions, his stay in hospital as an in-patient will be only slightly increased, averaging twenty-two days; but he will have to continue reporting at stated intervals for treatment over a period of about one hundred and sixty-five days. During all this time he is physically unable to perform full fatigue, and of course is not available for a draft. The balance sheet stands as follows in the majority of cases: Primary syphilis, available for France in fifty-seven days; generalized syphilis, available for France in one hundred and eighty-seven days.

In conclusion, it can be seen how absolutely essential it is that we at Etchinghill have the co-operation of all medical officers in this area. Those few short weeks between the appearance of the primary and the advent of the secondary symptoms, make a difference of almost three times the length of treatment required. What is of infinitely more ultimate importance to the patient and the State is that the primary cases are probably permanently cured, while the generalized ones will, in a large percentage of cases, require further prolonged and intensive treatment.

OUR CONTEMPORARIES.

MEDICINE.

Important Phases of the Allen Treatment for Diabetes.

BY

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Oakland, Calif.*

An exposition of the routine Allen treatment would be useless in this paper. Joslin describes the complete treatment exceedingly well in his recent book to which all are referred. However, it seems of definite value to comment on some of the high lights of Allen treatment and to emphasize

a few of the valuable points established by the great volume of recent research, stimulated by the work of Allen, as well as to offer some personal ideas formed through study of many diabetics in several of the medical centres of the East and on about thirty, seen in private practice during the last year. Thus the writer hopes to make the routine treatment, which is well known to most physicians to-day, more successful in the severe cases seen in routine practice.

It seems best to group the ideas of the writer under the following headings:

(1) *Complete physical examination is necessary.* The fasting treatment should always be preceded by a complete physical examination. Skin infections, as well as all other foci of infection, must be discovered and cleared up, since acidosis is more likely and food tolerance lower where infection is present.

Routine Wassermann reactions ought to be made. Warthin believes that syphilis is responsible for more cases of diabetes than we ordinarily imagine. Rosenbloom emphasizes this same idea. As yet, however, no definite improvement in diabetes has been recorded as a result of luetic treatment. Four of my private cases seen last year had positive Wassermanns. One patient has had a great increase in tolerance, possibly due to antiluetic treatment; the exceedingly severe pyorrhea has been cleared up since diabetic treatment was instituted.

Careful examination of the body for tuberculosis should be routine moreover, since diabetes favours this infection. One of my private cases had advanced tuberculosis as well as syphilis when first seen, thus making diabetic treatment useless. Arterio-sclerosis occurs frequently and it is this condition which leads on to gangrene. One case came to me with the left foot amputated due to gangrene and she had begun changes in the right foot. She has not been lost, though arterial changes are most marked. Oftentimes, as Robin recently pointed out, diabetes complicates cancer of the gastro-intestinal tract. Heart and kidney abnormalities as well as central nervous system affections must also be in mind. It is evident, therefore, that a thorough physical diagnosis is most important in all cases of diabetes.

The severity of diabetes is at times necessary to determine. For this purpose, the tolerance tests recently described by Addis have proved most satisfactory to the writer.

(2) *Individualized treatment for each patient is important.* The physician should be able to vary the routine Allen treatment to suit the individual case. Severe cases must be in a hospital, where accurate records

by reliable nurses are kept and where is a trained dietician. Moderate cases can be ambulatory; however, they must report daily to the office while fasting, save twenty-four hour specimens of urine and thus be watched carefully for acidosis. Rarely cases must not be fasted because of weakness or infection. Fasting, where acidosis is present or develops, should be intermittent as described by Joslin. My cases have received practically no soda or alcohol during their treatment. However, as Joslin says, soda must be given in alarming cases of acidosis. In fact, recent observers seem to show an increased sugar tolerance when soda is given in large doses. Until this is proved, however, the simplest plan is to give practically no soda. Allen rarely uses alcohol now, and Joslin has never used it to any extent. However, in very severe cases, where the tolerance is limited to seven or eight hundred calories, it might be of use. Whiskey, if used, must be carefully tested for sugar, as the writer found in the one severe and unsuccessfully treated case he has had during the last year. It is, therefore, obvious that the treatment must be varied according to the case.

(3) *Patients must learn the approximate caloric values of foods and must never exceed their tolerance.* The patients, who learn the caloric values by weighing their food and estimating the grams of carbohydrate, fat and protein ingested, finally gain the power to judge the weights and the caloric value of food without scales or food tables. They are able to eat most of the ordinary food served, always taking the proper amounts. Moreover, they are the patients who are finally able to care for themselves completely. Of my patients one especially has developed this ability. He eats in any restaurant or club, always carrying some bran biscuits in his pocket. His tolerance is very low but he is perfectly comfortable and well, remains sugar-free continually through his own care, and carries a big business on his shoulders.

Continually eating the proper food within his tolerance is the most important part of the treatment for any diabetic. It is our hope that the weakened metabolism may be strengthened after several years, if necessary, of rest brought about by undernutrition.

(4) *The weight of the patient must usually remain below normal.* It is often necessary to reduce the patient's weight far below normal in order to destroy acidosis and glycosuria. The common observation that thin people are the longest lived should be consoling to diabetics. Besides, it is futile to try to increase their weight by over-feeding, since the characteristic feature of the disease is loss of weight. Food eaten only builds tissue and gives strength to the extent that it is metabolized. The weakened pancreatic function of a diabetic may be able to metabolize very well for a weight of 150 pounds but not at all for 250 pounds. Excessive food cannot be used and is a real poison to the body, in that ketogenic bodies and excessive sugar are

produced in the tissues and blood. Thus practically all diabetics should be below normal weight and no steps should be taken to increase it unless it is more than 15 per cent. below normal, and some severe cases must be even further than that below normal in order to live.

(5) *Excess of food is harmful.* Under-nutrition is the keynote of the Allen treatment. It spares the weakened metabolism of the body, increases tolerance, destroys ketonuria and helps assimilation of foods. Moreover, too much protein and fat are as harmful as too much carbohydrate. Mosenthal firmly believes in these ideas, stating that he gives 1600 calories to small people and 2000 to larger ones and, when the tolerance is high enough to stand more calories, he increases the carbohydrate intake as fast as the tolerance permits.

Weakness felt by some patients is due in many cases, where the caloric intake is 2000 calories, not to deficient nourishment but to lack of exercise. Williams recently has shown that undernutrition does not decrease physical vigor of diabetics, while overfeeding results in serious loss of strength. Food which is not metabolized gives no strength.

(6) *Careful studies of acidosis are essential.* Many factors favour acidosis. Joslin mentions ether, vulnerable kidneys, infection, excitement, fat-protein diet, and a diet inadequate in salt content. Moreover, the fasting treatment may bring alarming and severe acidosis.

Thus the diagnosis, prevention and treatment of acidosis is important. This subject has been thoroughly discussed in a recent article by the writer. I feel it necessary to again emphasize Henderson's assertion that we cannot depend on urinary findings in diagnosing acidosis. This is shown by recent reports of fatal cases of coma, where acetone and diacetic acid were absent in the urine, which confirm such findings in former literature.

(7) *Exercise is most important.* Exercise shortens the initial fast and produces physical strength in the later treatment. Tolerance, thus, is increased, due to the fact that exercise burns carbohydrate. Ketogenic bodies are also consumed. Exercise should only be restricted where the heart is weak or where coma threatens.

(8) *Treatment necessitates self-denial and will-power.* Patients must realize the danger of breaking their fast or disregarding their limitations of diet. Physicians can aid in this matter, to a certain degree, by having fortnightly or monthly reports sent by the patients concerning their diet and urinary findings. The requirement of Allen that every patient must be continuously sugar-free should be insisted on.

For patients who persist and are faithful in the treatment there is definite hope for improvement. Naunyn and von Noorden have long thought diabe-

tics may recover. Moreover, Allen believes that diabetes is due to a functional weakening of the pancreatic activity and that rest of that activity even over a period of several years may strengthen it possibly to a cure. This idea receives support by the recent calorimetric researches of Joslin, and DuBois and Allen which have shown that even the severe cases retain power to utilize part of the carbohydrate of their diets, and that this ability increases as treatment continues.

But even with the prospect of health and normal activity ahead of them, some patients are unable to persist in the treatment. One of my young patients recently, who became sugar-free without the development of acidosis and who developed an excellent tolerance, failed again and again to deny himself extra food and finally the task had to be abandoned because of his indifference and lack of will.

A most tragic case occurred a few months ago. A young girl of twenty-two came to me nearly in coma, was made sugar-free and finally obtained a high tolerance. She returned to work and ordinary life for two months. Then she was persuaded by Christian scientists to ignore all medical treatment. In two weeks she died in coma. This girl wanted to get well, but being in contact with Christian scientists and away from my supervision, she accepted their promises for a cure.

(9) *Environment, habits and mental attitude must be controlled.* Happy, tranquil and congenial surroundings, as well as a life reasonably free from worry and agitation, are most necessary. Recreation, ambitions and even the home life of a patient must be investigated and controlled by the physician. Moreover, the patient should work no longer than eight hours daily, which has been shown to produce the most efficiency even for perfectly sound men.

Results. Certain unsuccessful cases are occasionally met with. Joslin has divided them into those due to (1) incomplete treatment, (2) intercurrent infections and (3) diabetes of long standing. The writer has had one uncontrollable case during the last year, whose tolerance was limited to 600 calories obtained from fat, protein, and about 1 gram of carbohydrate, her weight being only 90 pounds. She had syphilis as well as diabetes. Finally, some months after she left me, she was admitted to the University of California hospital and died in coma. Possibly, if I had been content with even a lower weight and a caloric intake of 700, she might have lived. One case was first seen in coma and died soon afterwards. One other case had a heart lesion for which nothing could be done and another syphilis as well as an advanced pulmonary tuberculosis.

All of my other cases seen during the last year have been markedly improved. Complications, such as cystitis, pruritis, carbuncles, falling eye-

sight, arterio-sclerosis and gangrene, have usually been improved. One recent case of carbuncle, most extensive in degree which had been present for several weeks when I first saw it, has recovered under the Allen treatment, together with efficient surgical attention. All patients have a sense of well-being, increased strength and improved health.

In literature numerous instances of remarkable results in diabetic treatment are recorded. The most notable of these are those of Geyelin and DuBois, Jonas and Pepper, and Christie. Joslin has brought out the fact that pregnancy is safe in diabetes controlled by the fasting treatment. Surgery without ether anesthesia is also safe, when the diabetic is controlled and when patients are prepared by giving large doses of alkali in children for several days before the operation. Diabetes in children responds to the fasting treatment but, as Greeley emphasizes, the patients must be carefully watched, especially when any infection whatsoever develops, since their tolerance is very apt to decrease rapidly.

Thus the benefit derived from intelligent and persistent application of the Allen treatment for diabetes warrants its essential principles.—*Practical Medicine.*

The Dyspepsia of Constipation

T. E. H. THAYSEN. Analysis of over 100 cases of constipation with dyspepsia shows that two distinct types exist.

1. The dyspepsia is secondary to the constipation and begins directly after meals. In two-thirds of these cases no abnormalities of the gastric secretion or of the mobility and position of the stomach are demonstrable. The frequency of the attacks of dyspepsia increases with the duration of the constipation, and they cease in 70 per cent of all cases when treatment of the constipation is successful. In practically all these cases the constipation dates from an age under 26 in women and under 31 in men. In this class the dyspepsia is a reflex consequence of the constipation and deserves the title *dyspepsia colostatica*.

2. The dyspepsia develops simultaneously with, or even before, the constipation, and begins half an hour to two hours after meals. The stomach itself is in a normal condition only in about one-third of these cases, and the longer the constipation has lasted, the slighter are the dyspeptic symptoms. Treatment of the constipation relieves dyspepsia in about half of these cases only, and only in 63 per cent. does the constipation arise before the 26th year in women and the 31st year in men. In gastric ulcer, the relation of the dyspepsia to the constipation is the same as in other cases belonging to this group.—*Medical Review.*

Oral Administration of Ether as an Adjuvant to "Open Ether."

BY

GLEN H. BURNELL, M. B., B. S. (ADELAIDE).

Broken Hill Hospital.

In the *British Medical Journal* of March 2, 1918, J. T. Gwathmey published some preliminary notes on general analgesia for dressings and slight operations. At this Hospital a shortage of medical officers has led to the routine administration of anaesthetics by the nursing staff; this has resulted in the safest anaesthetic, *viz.*, "open ether," being always used. The results were not uniformly good, as the patients were often very rigid, or had spasms of coughing during the operation, for it is notoriously difficult to retain the patient at a uniform level of surgical anaesthesia by the open method.

Having read Gwathmey's article, I decided to try his method as an aid to the older method. This article is an attempt to give an unbiased opinion as to the advantages and disadvantages of this combined method of anaesthesia, the remarks being based on an experience of seventy cases so treated.

In order to be able to compare the methods, we have kept statistics of twenty-four patients anaesthetized by open ether alone

There has been no selection of cases for either method, the patients being chosen in a haphazard manner.

We began by using Gwathmey's original method, *viz.*, giving the patient the following mixture a quarter of an hour before operation:—

Ether, $\frac{1}{2}$ oz. (14 mls.)

Chloroform, $\frac{1}{2}$ drachm (1.75 mls.)

Liquid paraffin or olive oil, to 1 oz. (28 mls.)

the above being "sandwiched" between two mouthfuls of port wine. It was found, however, that the patient often vomited the mixture, so the next step was to give chlorotone, grs. x. (0.6 gm.) $1\frac{1}{2}$ hours before taking the mixture. This has almost completely abolished the vomiting.

It was also found that fifteen minutes was not a sufficient interval to elapse between taking the mixture and commencing the administration of the "open ether." The patients are usually in the exalted stage at this time, but by allowing 30 to 40 minutes to elapse, the patient is brought to the theatre in a drowsy condition, somewhat resembling the "fuddled" condition of an alcoholic. A few patients have come in asleep (five out of seventy cases). The great majority have been drowsy and a few hysterical.

In our experience, for major operations, the "gastric ether" has always to be reinforced by some further anaesthetic, as even the patients who are asleep will only tolerate the slightest manipulations, so that the method by no means obviates the need of an anaesthetist.

We consider, however, that it is a distinct advantage to be able to commence the induction of anaesthesia in the patient's bed and then to take him to the theatre in such a mental condition that all fear of the operation is forgotten. This must help to minimize shock.

A hypodermic injection of morphine, gr. $\frac{1}{6}$ (0.01 gm.), has in some cases been given at the same time as the "gastric ether," but we have not been able to notice any difference between the cases so treated and the others.

We have increased the dose of "gastric ether" to $1\frac{1}{2}$ ozs. (42 mls.) of the above mixture, and in some robust men have given 2 ozs. (57 mls.) this containing 1 oz. (28.4 mls.) of ether and 1 drachm (3.5 mls.) of chloroform. One and a half ounces (42 mls.), however is our routine dose.

During the operation it is noticed that the abdominal muscles are beautifully relaxed, and this, to one who has tried operating through a rigid abdominal wall, will be welcomed as one of the chief advantages of the method.

It was hoped that this method would result in a considerable saving of ether, but it has not proved to be so great as was expected. We have kept records in every case of the duration of the operation (commencing at the time when the "open ether" was started, not the operation itself, and ending at the time when the patient was removed from the table), together with the amount of ether used. From the whole of these figures I have worked out the average for an operation lasting one hour, and they result as follows:—

With gastric ether, 11.1 ozs. (315 mls.)

Without gastric ether, 18.1 ozs. (514 mls.)

thus resulting in a saving of 7 ozs. (nearly 200 mls.) per hour. I averaged them up because the cases vary a good deal, so that it is not quite fair to compare individual cases.

Both the above figures may seem excessive, but they are derived from carefully kept statistics; probably with expert anaesthetists the figures on both sides would be considerably smaller. At the present price of ether the above represents a saving of nearly two shillings per hour; from it, however, must be deducted the price of the chlorotone and the "gastric ether" dose, the former costing one penny and the mixture threepence half-penny. This will lead to a considerable saving in the course of a year.

After the operation, the patient usually sleeps for four or five hours. He can usually be roused within an hour, but after that remains in a light sleep. The charge nurses are unanimous in stating that they prefer nursing patients anaesthetized by the combined method, as they seem to escape so much of the usual post-operative pain by their long sleep. Post-operative vomiting is neither more nor less than in ordinary cases.

To summarize the advantages, I would place them thus :—

- (1) Loss of fear of the operation, thus lessening shock.
- (2) Less ether used.
- (3) Muscles well relaxed.
- (4) Less post-operative pain.

The disadvantages are :—

(1) Slightly more pre-operative preparation, viz., giving the chlorotone and "gastric ether." This is very little extra, as no special preparation is necessary.

(2) In two cases the respirations have reached a very low rate after return from the theatre. In one of these, a man, aged 55, received 2 ozs. (57 mls.) of the mixture and morphine, gr. $\frac{1}{4}$ (0.016 gm.), half an hour before the operation, which lasted 40 minutes; after the return from the theatre his respiration went down to eight per minute. He recovered without any other ill-effects. Another case the same day, a woman, aged 30, received 2 ozs. (57 mls.) of the mixture and morphine gr. $\frac{1}{4}$ (0.016 gm.), half an hour before operation, which lasted 68 minutes. After return from the theatre her respirations fell to three per minute. Artificial respiration for ten minutes relieved the situation, and she went on well for 24 hours, but then her pulse failed and she died about 36 hours after operation. The post-mortem examination showed a red hepatization of the lower lobe of the right lung. This may have been due to the stagnation of blood in the lungs during the period of slow respirations, or may have resulted from exposure of the chest-wall during the operation, which was a radical breast excision. The latter is unlikely, in view of the fact that special precautions were taken to avoid such exposure. However, in view of the experience in these two cases, I would suggest $1\frac{1}{2}$ ozs. (42 mls.) of the mixture as the maximum, and especially if morphine is used in conjunction with it.

Men who have experience of rectal anaesthesia will find that, by this method, they can attain equal, if not better, results without any of the preparation necessary for the former, which adds to the work of the nursing staff and the worry of the patient.

Gwathmey has recently suggested substituting one drachm (3.5 mls.) of paraldehyde for the half drachm (1.7 mls.) of chloroform, with the object, I presume, of inducing sleep more quickly. We have, as yet, no experience of this.

The foregoing are the facts as we have observed them. No claim is made that this method represents the last word in anaesthesia, but I would suggest that in hospitals where the anaesthetists are not experts this method will have a definite and useful place.

I am indebted to the Superintendent, Dr. Birks, for access to the Hospital records and for permission to publish these notes.—*Medical Journal of Australia.*

Pneumonic Influenza.

We have been requested by the Consultative Council of New South Wales to publish the following document, which has been drawn up by the Chief Quarantine Officer in Sydney, dealing with the clinical types and symptoms of pneumonic influenza :—

Incubation.

From clinical experience, the incubation period varies from ten minutes to twenty-four hours. There is some evidence to show that it may extend to four days. The majority complain that they are suddenly struck down with the disease with no prodromal symptoms.

Clinical Types.

(1) Abortive.—Vague pains all over the body. It is not really a pain, but a bruised feeling from the part which is subjected to pressure from lying on the back, or across the front of the chest from the weight of the bed clothes. Headache, frontal in character, but not severe, pain down the spine. The temperature in these cases rises from 100 to 101 F., and ends by lysis and profuse sweating on the third day.

(2) Fulminating types.—The abortive type may suddenly assume a fulminating type. The patient becomes cyanosed, sometimes to a striking degree. The clinical signs of broncho-pneumonia are present. The temperature rises to 102° to 103° F. Sweating is profuse. The right heart is dilated. The dyspnoea is extreme, with frequent attacks of air hunger. The pulse remains strong, but rapid, until about an hour before the end, when it becomes soft and running. When the pulse reaches 160 and over, death has always occurred. The patients are literally overwhelmed by a toxæmia, and make no reaction whatever against the disease.

(3) Gastric type.—Bleeding from the nose and vomiting of bright red blood is common in this type of case. Others, again, have vomiting but no hæmatemesis. Three patients passed bright red blood by the bowel one for 52 hours, the others for 24 hours and $\frac{1}{2}$ hours respectively.

One patient had dysentery—14 motions during the day, some tinged with blood.

(4) Septicæmic form.—Patient admitted in a comatose condition, the delirium ranging from a low muttering type with carphology to an almost delirious mania. The eyes are bright and the face has an anxious expression. Broncho-pneumonia is present or develops in the course of the disease. Towards the end, jaundice supervenes, a condition which seems to result from cloudy swelling of the liver (post mortem), and must be of a hæmolytic nature, as no obvious obstruction can be found. All cases of this type ended fatally after a protracted illness.

In only one case could the spleen be definitely said to be enlarged although two or three complained of great pain over the splenic area. One case (P. M.) showed an abscess of the spleen.

Special Symptoms.

Pain is generalized and of a fleeting nature. The patient himself cannot localize the most severe pain. Some refer it to the head (frontal) or the nape of the neck—others to the eyes and down the legs. By pressing on any part of the body pain can be localized.

The eyes.—Very few cases showed congestion of the palpebral conjunctivæ. When present it was slight in the extreme.

The nose.—Epistaxis is common. About 10 per cent of cases exhibit coryza, the turbinates and septum showing congestion on examination.

The mouth.—The tongue is flabby, showing teeth indentations and covered with a whitish brown fur. The tongue is almost always moist. Herpes appear on the lips and sometimes on the tongue (two or three cases of broncho-pneumonia). Bleeding from the gums is rare. The soft palate is congested, and there is always a pharyngitis present.

Larynx.—Laryngitis is common. The voice is hoarse and in some cases aphonia occurs.

Trachea.—Pain along the trachea is common, and patients complain of the chest feeling "raw." The cough is irritable and dry.

The lungs.—All cases exhibit bronchial irritation, with only harsh vesicular breathing on auscultation. The cough dies away when fever declines.

Broncho-pneumonia, when present, has most usually started at the left base posteriorly as a small patch with broncho-vesicular breathing with crepitations or rhonchi (sibilant). In severe cases this patch increases in size with extraordinary rapidity, almost like an erysipelas. A patch

in the morning may increase to a lobar pneumonia by night, the whole lower lobe being solid. The base of the other lobe quickly becomes affected and the lobe solid. The left lung is affected more frequently at first than the right (90% of cases). Friction rubs are common. This often leads to a collection of fluid in the pleura. Empyema develops very insidiously, and where doubt exists the needle should be used. Post mortem examinations show both lower lobes of the lungs are solid, the bronchioles stream pus, and pus has been found in the interlobar clefts. The pleura is thickened and has a dry, fibrinous appearance.

Sputum.—Ranges from a greenish yellow muco-purulent to a frothy bright red type. At first, in bad cases, a typical rusty, then bright red blood—some cases a slight hæmatemesis, then, until death, a frothy red. The sputum, in some cases, is easily expectorated, in others it is of a dry, clinging nature, and has to be wiped from the mouth.

The liver.—In two cases of jaundice, liver was enlarged.

The spleen.—Slightly enlarged (post mortem results).

Kidneys.—Urine dark in colour, high specific gravity and a heavy cloud of albumin. Retention of urine is common. Kidneys (post mortem) acute cloudy swelling.

Heart.—The toxin has a disastrous result on the heart muscle. The pulse is at first slow and has no relation to the temperature. The tension and volume are good. Later, in fatal cases, the right heart becomes dilated, a soft murmur is heard in the tricuspid area and the pulse assumes a running type, its rate going up to 160–180. Cyanosis may be extreme.

Ears.—Four cases of deafness developed in course of the disease. All patients have recovered.

Brain.—All patients are heavy and stupid on admittance and remain like that until delirium takes place. The delirium in bad cases may be very severe and distressing to witness.

CONVALESCENCE.

The lassitude is extreme even in mild cases. Relapse is common. The heart muscle is liable to be seriously involved. Frontal sinuses have developed in two cases.—*Medical Journal of Australia.*

Asthma—From the point of view of the Rhinologist.

BY

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The nose and throat surgeon, in the course of his practice, deals frequently with asthmatic subjects; this shall be my excuse for entering into this evening's discussion.

We will all agree, perhaps, that asthmatic cases have one thing in symptom common, i. e., that this symptom (for asthma must be considered as a symptom only) is grafted on to an already existing diseased state, which in the majority of cases, is nervous. In other words, in cases of so-called bronchial, spasmodic or nervous asthma, which surely constitute a large majority of these asthma cases, we recognize that there is always a neuropathic basis, and that the addition to this of numerous and varied exciting conditions is responsible for the symptom in question. We must recognize, therefore, before defining any treatment or treatments for this symptom, that asthma is but a manifestation of a nervous, pathological or psychological condition.

BERKART maintains that asthmatics grow up in an atmosphere of "asthma." One has only to recall the number of chronic cough cases occurring in children, and the parents' repeated reference to such cases as asthma, to realize that there is much truth in the statement. BERKART further writes: "They suffer from a traumatic insult, which in time is converted into a psychic trauma; and every functional disturbance, however slight, is apt to react adversely upon respiration." The number of cases of this kind with which one meets is certainly surprising; and, therefore, the most rational course might seem an attempt to control the condition in its early stages. Abolish those early chronic coughs. Were thorough treatment thus carried out in the child, we would surely be doing more good to the race than can be attained by attempting cures in the adult.

I say attempting cures, for we must admit that real cures are not numerous. The nose specialist considers that he cures a lot of these cases; and perhaps he has a larger proportion of successes than the general practitioner. It rests with the latter gentleman, however, to say how many return to him from the former as failures. We all know how readily an asthmatic passes on to new doctors and new treatments in his search for his specific remedy; the rhinologist, it may be, is apt to consider a number of these cases as "cures." We have all had our "cures," and we are not backward in reporting them. Being human, we recall each other's failures, and try to

forget our own. But the fact stands that any one of us can pronounce a certain cure for this condition need hardly be discussed.

Varied, in truth, are the remedies which have proved successful in certain cases. In this one, "fanning with a feather at a distance," has been reported as wholly efficacious; in another case, painting the bronchial mucous membrane, under an anæsthetic, with various substances via the bronchoscope has been successful; in yet another, the injection of some enzyme into the circulation, in the hope of combating some anaphylatic condition, had secured the desired result. The list of drugs which in turn are claimed as the best for treatment of the condition in question is surprising. What then, must we deduce from this? That there is no one and certain remedy for all cases. And, indeed, remembering that the exciting causes of the attacks are so varied, this is a natural conclusion. These causes range from mere mental instability to the most advanced pathological change of some organ, the heart, perhaps, the skin, nose, etc. Asthmatics have been permanently relieved by the simple removal of an external pile, by the lowering of the blood-pressure, by the correction of an error of refraction, by the removal of some trifling mental worry or peripheral irritation, or by an elaborate operation upon the nose or accessory sinuses.

If I have gone into this aspect of the question at some length, it is because I wish to emphasize the necessity of some sort of grouping of these cases, in order, by correct diagnosis and subsequent correct treatment, to be able to deal efficiently with them. The haphazard canterization of the nasal mucous membrane in the hope of producing benefit in a case of asthma, if this be secondary to aortic aneurysm, must be condemned. And why compel a man to leave his employment and seek other climes when his asthma is secondary to such a condition as pressure in the mid-turbinate region, through some cystic enlargement of that bone? It, therefore, behoves us, if possible, to find the causative factor of the attack and deal with it, considering this for the time being as of primary importance. Cases could be grouped as the exciting cause occurs within the province of the several special branches of medicine.

With this end in view, and for my own convenience, I have worked out the following grouping of the cases which have come into my specialty as nose and throat surgeon. Seeing that it has helped me not a little, I venture to detail it in the hope that it may be of some value to others in the treatment of these cases.

I first divide my cases into:—

- (1) Those in which definite pulmonary signs exist.
- (2) Those in which there is nothing more than a transient obstacle to respiration in the bronchial tree, with scanty secretion or none.

In the first group we generally find well-marked pulmonary disease; there is abundant sputum, in which spirals, crystals, and sometimes tubercle bacilli are present; the patient is in a debilitated condition.

This first group may be sub-divided into:—

Sub-group 1.—Cases with no nasal deformity nor disease of the accessory sinuses.

Sub-group 2.—Cases with one or both of the above condition present.

Of the former I will say nothing, except that I do not consider them as coming within the scope of the rhinologist. Concerning the latter sub-group, I have observed that the patient who comes under it is generally in a debilitated condition, with a low blood-pressure, that the prognosis in his case is frequently good, and that the relief follows immediately upon the operation to correct the nasal fault. The permanence of the relief depends upon the thorough removal and non-recurrence of the pathological condition. The nasal conditions frequently met with are gross deformities of the septum nasi, hypertrophied middle turbinates (generally cystoid enlargement of the bones), diseases of the ethmoid and sphenoidal air cells, and empyema of the antrum of Highmore.

It would be inadvisable to leave this sub-group without mentioning the necessity of excluding other causative factors. The following two cases will serve to illustrate this.

The first case came under my notice while I was acting as House Surgeon to a leading London rhinologist. A man of middle age presented himself for treatment of a well-marked asthma. He had been referred to the rhinologist by the physician, who could find no chest trouble to account for the condition. An empyema of the left antrum of Highmore was found, and the diagnosis of asthma secondary to antral suppuration was made. The patient was seriously ill; and it was decided as a preliminary only to open and drain the antrum *via* the nose, under local anæsthesia. That same evening I was called to attend to the patient. I found that he had suddenly expired from rupture of an aneurysm within the pericardial sac. (This was later demonstrated at the post mortem examination.)

The second case came under my notice while in partnership with Dr. Robertson, who referred it to me for my opinion. A debilitated man of some 60 years, with a marked wheeze, had been under treatment for pulmonary tuberculosis for about eighteen months in a western district. On examining the chest suspicious of aneurysm of the aorta were found. An X-ray examination revealed a large aneurysm of the ascending aorta. The patient died within fourteen days of the time the diagnosis was made. He had, so far as I can recollect, sufficient nasal deformity to suggest treatment in this direction.

Such occurrences as the above are in themselves sufficient reason to warrant a chest examination in all cases of asthma.

Let us proceed now to group 2. These constitute by far the largest percentage of asthmatic cases met with by the rhinologist. They comprise the so-called bronchial, spasmodic or nervous asthma (including the form of paroxysmal dyspnoea). They may be sub-divided into:—

Sub group 1.—The paroxysmal and spasmodic forms of dyspnoea in which the mental element is undoubtedly the causative factor.

Sub-group 2.—The cases which I would refer to as nasal reflex asthma, in which a definite respiratory reflex exists.

Sub-group 3.—Those cases in which there is no irritable nasal condition present, but in which there is present a definite respiratory-circulatory reflex.

The last two sub-groups, it should be noted, very often co-exist.

I will speak here of the first sub-group, such cases as "cat" asthma, pollen asthma and draught asthma, and cases in which such trivial things as the examination of the throat, or the opening or shutting of a door, or the playing of certain airs on a musical instrument, and such like, produce spasms of respiration and allied conditions. It is seldom that these paroxysmal attacks are seen by a medical man, the attack generally being over before the doctor arrives; we have thus to accept the history as given by the patient's friends or the patient himself. And, indeed the latter is generally so well versed in his subject that hardly will we escape till we know it all *ab ovo usque ad mala*.

I was fortunate enough to come across a case of this paroxysmal form of dyspnoea a few days ago. The patient, a well covered man, 41 years of age, consulted me privately. He came to me because, a few nights previously when staying at his hotel residence, he was suddenly taken with a violent attack of "fighting for breath." He had several similar attacks during the last few years. He would wake up in the middle of the night with a catching of his breath. All he could do was to jump up from his bed, and fling himself across it with arms stretched out from his sides. To use his own words, he thought on each occasion that his last hour had come. The noise made by his breathing was so loud that it considerably disturbed and alarmed his neighbours. The attack would last but a few minutes. He was a plethoric person; and, so far as I could observe on examining his chest, he had no signs whatever of disease. He had a well marked nasal deformity, which, however, I do not think had any bearing on the attacks. He requested that I should not examine his throat without first using cocaine, as he always had violent attacks when this was not done. To see

how he would behave, I did the forbidden thing; and immediately I touched his pharyngeal region with the tongue-depressor he jumped up and gasped for breath. His face took on a very anxious expression, and his inspirations became so noisy that my nurse came running in much concerned from the adjoining room. I had previously had some chloroform by me, a few drops of which on a towel soon alleviated the condition. Subsequently, after a little suggestion, I managed to have an excellent view of his larynx, without the use of cocaine. He declared that I was the first to accomplish this with him. Capsules of chloroform and ethyl chloride were ordered; and, with these in his pocket, he assured me that he was afraid of nothing.

Sub-group 2.—In this sub-group one finds such conditions as hypersensitiveness of the nasal mucous membrane; in it, for instance, touching the septum or middle turbinate region with a blunt probe produces a reflex cough. These cases would correspond to the so-called asthma spots, the cauterization of which would give relief. Then we find such conditions as these deflected septi causing pressure on the middle turbinate bone: or, again, these two structures are sometimes so close that a slight increase in the thickness of the mucous membrane would cause them to touch; or, yet again, we find enlarged middle turbinates, with or without deflection of the septum (the enlargement of the middle turbinate may be due to a polypoid condition of the mucous membrane, or to a cystoid enlargement of the bone itself, which may cause pressure mesially upon the septum, or laterally upon the lateral wall of the nose; at times this is associated with ethmoid disease, in which case the polypi may be the causative factor in the disease); lastly, we find boggy conditions of the septal mucous membrane in the middle turbinate region. If this sub-group such treatment as is indicated for the condition present will frequently give excellent results. These patients, however, tend to have mild attacks of asthma even after long periods of freedom from the symptom, the recurrence being secondary to such conditions as over-work, worry, etc. I would here point out that the method of cauterization in these cases of boggy mucous membrane, and that adopted in the following sub-group, are different. In the above cases we aim at destructive cauterization.

The last sub-group is that in which our compatriot, Alex. Francis, has done so much good work. We should feel proud of the high position that one, who was formerly our fellow townsman, and whose early work was done in the front room of 69, Wickham Terrace, has attained to. The method of cauterization which he adopts is entirely his own; and I regret to say that I have come across many medical men, both in Australia and in England, who profess to follow Francis, and who, nevertheless, have not the slightest idea of his "streak" cauterization. It is Francis's aim to produce as little

destruction as possible; he maintains that he can secure the desired result in the specific cases by this method. He is guided in the prognosis and the length of his cauterization treatment by the fall or otherwise of the blood-pressure.

Francis divides his cases into three groups, according to the state of the blood-pressure, as follows:—

(1) Cases with blood-pressure above about 155 mm. Hg.. In this group if the blood-pressure is reduced by the cauterization, and remains down after several cauterizations, the outlook is excellent. We who have practised this method, have had some wonderful immediate results.

(2) Cases with blood-pressure between 130—155 mm. Hg.. Here, Francis maintains, the outlook is not so good.

(3) Cases with blood-pressure below 130 mm. Hg.. I have proved that cases in this group, as Francis himself holds, are seldom improved by the cauterization.

It must be borne in mind that the above treatment should be kept up periodically, a good indication, I have found, being to cauterize with a rise in the blood-pressure. If one works on the blood-pressure readings in this type of case, one will not often be disappointed with the Francis treatment.

I have heard Francis's method talked of lightly, but never so by those who have had a right knowledge of it. In the treatment of the symptom of asthma, it cannot be denied that this method, if used in the proper cases, has a distinct place—a place of no little importance among those employed for this purpose.—*The Medical Journal of Australia*.

Experimental Work On Vaccine.

MAJOR W. C. ROSS, I. M. S., in his short report on Vaccination in Behar and Orissa, has an important note on some experimental work carried out at the Depot during the past year. He writes:—

Last year it was demonstrated that glycerine vaccine was the most stable preparation for withstanding the vicissitudes of high temperature and travelling. This year we have compared the stability of vaccines which were respectively slightly acid, slightly alkaline, and neutral, and also of vaccines which were prepared with distilled water, boiled water and normal saline solution, and we have found that neutral vaccine is the most stable and that distilled water is a much better diluent than either boiled water or normal saline solution.

Another series of experiments has demonstrated that glycerine vaccine, which is neutral in reaction to begin with, becomes acid slowly in cold store and rapidly becomes acid when exposed to room temperature. As we have

already proved that acid vaccines are not stable, the result of this experiment supplies us with the explanation why vaccine deteriorates rapidly after issue and becomes inert in from ten to twenty days according to temperature. It is really a question of acidity, which is presumably produced by the living virus in the vaccine.

Another experiment showed that the bacterial content of the vaccine as shown by plate cultures diminished much more rapidly when the vaccine was kept at room temperature than when it was kept in cold storage. This is also presumably due to the more rapid production of acid at the higher temperature which, while it reduces the number of extraneous organism, also makes the vaccine rapidly inert; this experiment demonstrates the necessity for the prolonged storage of vaccine at slow temperature before it is issued or used.

Another experiment proved that exposure to bright sunlight causes rapid deterioration of the vaccine, and justifies the change of packing from capillary glass tubes to collapsible metal tubes for that reason as well as for the greater convenience.

The feeding experiments, which were carried out during the year, definitely proved that a 50 per cent. increase in the calf's ration produced nearly a 50 per cent. increase in the vaccine production, but a further increase gave bad results owing to the indigestion and diarrhoea caused by over-feeding. The rations have therefore been standardized at the 50 per cent. increase, with very satisfactory results.

Further experiments were also carried out in the manufacture and packing of the vaccine with a view to getting a better product which would keep better and would be easier to pack and handle. Some improvements have already been introduced, but final results have not yet been obtained in this direction."—*The Indian Medical Gazette*.

SURGERY.

Disinfection After Communicable Diseases.

BY

R. K. ANDERSON, M. D. MILTON, ONT.

I wish, at the outset, to disclaim any attempt to give something new or original, but will confine myself to what is considered the best means of preventing the spread of communicable disease.

My remarks will refer, more particularly, to the method adopted in the smaller towns, villages, and rural districts where there are no isolation hospitals and no disinfecting stations. I am not a firm believer in the efficacy

of disinfection as ordinarily practised. It is usually done by a sanitary inspector appointed by the council, without any regard to his suitability for such work. Sanitary inspectors should have some training to get the best results.

By disinfection is meant the employment of those means which will destroy contagion and prevent the spread of communicable disease. Any means used should be cheap, prompt, and effective in its action and should not injure furniture or other articles with which it comes in contact.

It must be applied to the bacteria in sufficiently concentrated form and must be left long enough in contact to kill them.

Its aim is to stamp out the disease and all the various means known to science should be employed. Therefore, disinfection should commence with the inception of the disease and should be practised throughout the whole period of the illness of the patient. The greater the precaution taken at the beginning and during the illness the less the danger and trouble at the end.

Thorough and effective isolation of the patient and his attendant is of prime importance. He should be in a large room, bare of all unnecessary furniture, rugs, curtains, etc., easily shut off from the rest of the house and having an outside entrance if possible. It is desirable that the room have an eastern or southern exposure, with ample window space to admit a maximum amount of fresh air and sunlight. Free ventilation is a protection to both patient and nurse.

Arrangements should be made to supply food and other necessities without the attendant leaving the rooms under quarantine. No article or utensil should be taken from the room without being first disinfected or boiled. The nurse should wear only such clothing as can be washed, and, when leaving the rooms, should wash hands and face and put on outer covering not kept in the sick room.

The floor of the room and furniture, instead of being dry swept or dusted, can be gone over with a cloth wrung out of a solution—5 per cent. of lysol, 10 per cent. of carbolic acid, or 1 to 500 of perchloride of mercury.

Remnants of food, dishes, and table utensils may be boiled. Discharges, whether from the mouth, nose, ears, bowels, or kidneys, should be burned at once or placed in a strong disinfecting solution before removal. Alvine discharges should be well mixed with the solution to ensure success. Chlorinated lime is useful for this purpose.

Blankets, sheets, or clothing should not be hung out in the porch or yard until soaked or well sprinkled with a 10 per cent. solution of formalin.

Pets of all description should be excluded from the sick room.

It is scarcely possible to fix, definitely, the time when a person suffering from a communicable disease ceases to be a danger to the public health. The

time fixed by the provincial board is only approximate and should be modified to suit individual cases.

When notice is given by the attending physician that a patient is ready for release from quarantine, the M. O. H. of the municipality should visit the patient and decide for himself and for the public whether or not all danger from infection has passed. This is the duty of the M. O. H. for which the public pay him, little or much as the case may be; still it is his duty, since he accepts the office, as there is little sense in quarantining a case of communicable disease and disinfecting after, if a patient, who is the carrier of that disease is allowed to mingle with the public. It is advisable that this be made obligatory on the part of the M. O. H., then it would free him from the charge of attempting to interfere with the prerogative of the attending physician.

The patient, before being released from quarantine, should be given a warm bath, using a brush and biniodide of mercury soap, paying particular attention to the face, hands, and hair, and then rubbed with alcohol. The hands, face, and hair of the attendant should receive like treatment. Both may then be given a change of garments and the ones in use left in the sick rooms for disinfection.

In the disinfection of the room and furniture, hot water, soap, and the scrubbing brush, thoroughly used, along with free aeration and exposure to sunlight is more efficient than either liquid or gaseous disinfection.

Boiling is the best means for treating all fabrics and utensils not injured by such process. These means alone, properly used, will free most rooms from contagion. Liquid disinfectants, however, make a valuable adjunct and may be used in the scrubbing water.

The simplest and probably the most efficient method for gaseous disinfection of rooms is by formic aldehyde and permanganate of potash.

Sixteen (16) ounces of a 40 per cent. aqueous solution of formic aldehyde and eight ounces of permanganate of potash are used for every 1000 cubic feet of air space.

The room is made as nearly air-tight as possible; bedding and clothing are hung over chairs or on lines across the room, books opened and stood on end, closet doors and dresser drawers opened so as to be freely exposed to the fumes. Woollen outer clothing and bedding can be freely sprinkled with a 20 per cent. solution of formalin, and it is desirable to sprinkle the floor and walls with the same solution or with water.

Vessels containing boiling water from which steam will rise, may be placed about the room if there should be no better way of maintaining the necessary humidity of the atmosphere.

The temperature of the room should be not less than 65 degrees,

In the centre, place a tub containing about two inches of water and in this tub put a large galvanized iron pail to hold the ingredients.

Place in this pail the permanganate of potash mixed with an equal quantity of sand and pour over it the formic aldehyde solution. The operator should now make his exit expeditiously. The sand will give him a little more time, and it prevents the oxide of manganese which is formed from inhibiting some of the action of the formic aldehyde. It also prevents the violent ebullition and spilling over of the ingredients.

The room should be left closed for six hours and then freely ventilated. The remaining gas can be neutralized by a sprinkling of ammonia water if desired.

Disinfection by formaldehyde gas is superficial at best, and should be followed by a thorough scrubbing with hot water, soap and brush, including in this process all woodwork and furniture not injured by such treatment. Disinfectants may be used in the water—lysol, 2 per cent., carbolic 5 per cent., or formalin, 10 per cent. Perchloride of mercury should not be used with soap. Furniture injured by scrubbing may be mopped over with one of the above solutions.

The walls may be repapered or limewashed, but this is immaterial.

While preparing this paper, I wrote to the M. O. H. of Buffalo, Chicago, Detroit and Winnipeg, also to Parke Davis & Co., and the *American Journal of Clinical Medicine*, asking what method they recommended and if they placed reliance on chemical disinfection.

I acknowledge my indebtedness to all of these gentlemen for their prompt and courteous replies.

They are very much in accord that isolation and hospitalization of all cases is of first importance in preventing the spread of communicable diseases; that the free use of hot water, soap, and the scrubbing brush, along with fresh air and sunlight is the best method of destroying contagion, and that liquid disinfection is more valuable than gaseous disinfection.—*The Canadian Medical Association Journal*.

OBSTETRICS AND GYNÆCOLOGY.

A case of Ectopic Gestation Burst into the Rectum (4 to 5 Months).

BY

DR. T. C. CHATTERJEE.

Late House Surgeon, Eden Hospital.

Date—April 1st.

Name—Wife of B. P. H. of Diamond Harbour.

Preg.—Mother of 3 children, last child 8 years old.

Examination—On April 1st, 1917 :—

Abdomen—A tumour about the size of a 6-month pregnant uterus, and very hard and tender. Cannot be moved.

Pelvic Viscera.—Open one finger; on passing the finger a lump is felt in the uterus, soft and felt like a portion of ovum retained in the uterus. The uterus cannot be moved, and cavity cannot be made out definitely; and tender at every part. The patient is in extreme pain, cannot lie in bed, cannot sit, groaning as if she is in extreme agony. There is a blood discharge.

On asking for the history, the husband told me that she was 2 to 5 months pregnant, and all came out about a week before. Since the abortion she is suffering and going from bad to worse.

Clinical Diagnosis.—(i) Incomplete abortion, with decomposition of the remainder of the ovum and consequent parametritis, etc. ?

(ii) A case of fibroid with pregnancy and subsequent decomposition of the remainder of the ovum ?

They are ordinary low-class people and illiterate, so no satisfactory history could be had.

Treatment.—Under CHCl_3 the uterus was explored and bits of decidua tissue scraped out with a blunt flushing curette; and the uterus felt like a fixed subinvolved one. No reduction of the size after the emptying of its contents. Small bits of something like decidua tissue and chorionic villi were also removed, by a small ovum forceps.

The patient felt well after the operation, with complete disappearance of the pain; on the night of the day of operation, she developed symptoms of diffuse peritonitis with a temperature 104° , pulse 140, respiration 25 to 30 per minute.

The tympanitis, hiccough, temperature, all disappeared—with a long-tube enema with 2 ounces of turpentine and 2 ounces of castor oil—but the pulse and temperature remained the same till next morning. She remained better till the evening of the next day, when distension, flatulence, etc., and all the symptoms of peritonitis again developed and remained for 5 to 6 hours, but subsided again after a long-tube enema.

Pulse rate remained the same, and the temperature varied from 101.5° to 104° for two days. The patient started to pass mucus and blood, just like a case of a acute dysentery. On the 15th day after operation she complained as if something was obstructing the rectum and that she was feeling uncomfortable. The usual rectal saline was continued every 4 hours. On the 20th day she passed good solid stools and a piece of bony substance was found with the motion. On washing it out it was found to be a piece of small bone, and how it came could not be made out; all other stools were washed since then and every time small bits were found and collected. It was finally found to be the bones of a small foetus, as can be seen from the specimen.

The bones were collected—as many as could be found in the stools.

The tumour in the abdomen gradually subsided, and the patient left for her home, with all the symptoms disappeared, in a month's time.

There was history of gonorrhoea in the husband as well as the wife.—*The Indian Medical Gazette.*

OPHTHALMOLOGY.

Technique of the Operation on Cataract.

BY

LT.-COL. H. KIRKPATRICK, M. B., I. M. S.

It may be useful to place on record various points in technique—the result of the experience of successive superintendents—which have crystallized into the hospital routine in the operation for senile cataract.

In selecting cases, a fairly liberal view of the conjunctiva is taken, provided that the lachrymal apparatus is healthy. An eye with obvious pyogenic infection in its surroundings is of course at once rejected, but small meibomian infarcts, etc., are disregarded. Should the patient have suffered from trachoma, he is, if possible, given some preliminary treatment; but the time spent on preliminaries must always be dependent on the circumstances of the case.

The evening before the operation the patient is prepared in the usual way, the lashes being cut and the face and lids thoroughly washed. A trial bandage is then put on; this is removed about an hour before the operation next morning. Herbert's method of conjunctival disinfection is followed, practically every patient being given a full two minutes irrigation of 1 in 3,000 perchloride of mercury. After being cocainized, a hypodermic injection of morphia combined with atropine administered, and the pupil dilated by atropine, the patient is laid on the operating table. The lids are taken between the finger and thumb of the left hand so as to make their edges protrude. They are then lightly squeezed so as to empty the orifices of the meibomian glands and the margins gently scrubbed by a swab of wool twisted on to a "koochie" and soaked in sterile saline solution. The mucus which has resulted from the perchloride irrigation is next swept out of the fornices by similar wool mops on koochies moistened by saline. These are entered into the recesses of the fornices which are cleared by a light turning movement. The speculum is now introduced and the conjunctival sac thoroughly irrigated with saline solution.

All solutions introduced into the conjunctival sac are, of course, boiled. Instruments are also sterilized by boiling, the blunt ones for three minutes.

and the sharp for one-and-a-half minutes. This may seem short from a bacteriological point of view, but in practice it is probably sufficiently long to sterilize a clean, polished instrument. The short period of boiling does not seem to affect the temper or keenness of the instruments as fifty sections are frequently made by one knife. The cutting instruments are placed in a rack and the blunt in a tray, the floor of which is made of wide-meshed wire-gauze so as to allow the water to drain away. The trays and racks, holding the instruments, are lifted out of the sterilizer and all the moisture possible drained off by shaking before placing them on the instrument table. Great stress is laid on using dry instruments and it is found useful to keep a sterilized towel in the belt of the surgeon's apron on which the handles can be wiped if necessary. The moisture can be jarred off iris forceps by striking the handle against a finger before introducing them into the eye. A towel soaked in disinfectant is placed over the patient's head, but, no mask is used for the eye. The surgeon prepares his hands in the usual manner at the commencement of a batch of operations and scrubs them in a bowl of disinfectant between each operation. He and his assistant wear mouth masks and sterilized aprons. McKeown's irrigator is sterilized with the contained saline and its rubber tube is allowed to hang free in a sterile wide-mouthed bottle when not in use. No instrument is introduced into the eye more than once without being sterilized again.

The routine operation is capsulotomy, and Smith's operation is only done in exceptional cases. The first step in the operation is the laceration of the capsule by a Bowman's needle, which is passed into the chamber at the corneo-scleral margin at the point selected for the subsequent introduction of the knife. A large tear, of any pattern desired, can be made in the anterior capsule, the whole of which is exposed to view by the dilated pupil. At the present time a large T-shaped opening is the variety favoured, a horizontal cut being first made and then a vertical cut downwards from its centre. This method of laceration was introduced many years ago by Col. Drake-Brockman and each succeeding superintendent has endorsed its value. It is difficult to imagine why it has not been more adopted by other surgeons. Its advantages are that, firstly, the capsule and the lacerating instrument are in perfect view whilst the tear is being made, so that this can be controlled in a manner which is impossible when only watched through the wrinkled cornea of a collapsed anterior chamber. Secondly, should the patient make a violent squeeze whilst the iridectomy is being performed (not such a very unusual occurrence in hospital patients), the nucleus will probably shoot out of the torn capsule and leave the latter as a protection to the vitreous, which is thus less likely to be lost. Minor advantages are that the nature of the cataract and size of the lens can be estimated and the incision adapted to suit, also that the point of a somewhat dull knife will enter the chamber with ease if introduced through the

wound made by the needle. The objections urged against the procedure are that the chamber may be emptied, and that in case of morgagnian cataract the chamber may be obscured by the escaped fluid and the section made more difficult. Experience proves that if the needle be held lightly and ordinary care exercised, the danger of aqueous escape is infinitesimal and should the 1 in 1,000 chance come off, the chamber can easily be filled by the irrigator. It will be found, too, that the escaped fluid from a morgagnian cataract falls to the lower part of the chamber and leaves the upper half practically clear, so that the knife can be easily seen in the whole of its course across; indeed the section is easier in these cataracts than in others, since the depth of the chamber is increased by the fluid lens substance.

The section made is usually corneo-scleral or very high corneal, the point of the knife being entered on the track of the needle. Should the conjunctiva be doubtful or the patient be very old, a conjunctival flap is made. A corneo-scleral section is, however, preferred as a routine measure. It goes without saying that great importance is attached to a light hold of the knife whilst making the section and to allowing the knife to find its own way through the tissue as far as possible. A block to support the upper half of the forearm has been found of considerable utility as ensuring increased steadiness and accuracy in making the section. This is covered by a towel soaked in disinfectant and placed beside the patient's head, the elbow and upper part of the forearm are rested on it whilst the ulnar side of the hand is supported on the side of the patient's head.

An iridectomy is nearly always performed. In making this, the orbicularis is held up over the superciliary ridge by the ring finger of the left hand, which holds the iris forceps. The little finger of the right hand is supported on the face and the iris is cut vertically so as to make as narrow a coloboma as possible. If the cortical matter is of a kind that is likely to wash out easily, a peripheral iridectomy is often performed so that the sphincter of the iris is left intact.

During the delivery of the lens nucleus the patient is allowed to look in any direction he pleases, which is usually straight forwards or upwards. Any instruction to move his eye in a particular direction is avoided as much as possible. The nucleus is first started through the rent in the capsule by a light pressure on the upper lip of the wound; as its upper margin passes through the aperture, the pupil changes shape. Light pressure towards the centre of the eyeball is then made on the lower part of the cornea and the nucleus delivered. Should the nucleus be of such a size as to require more than light pressure to deliver it, it is impaled on a Bowman's needle and pulled out, rolling it through the section as a child trundles a hoop. This manoeuvre was introduced by Col. Elliot and by the use of it the eyeball may be spared injurious pressure in cases where the lens fits the section tightly. If the

patient strains or rolls his eye excessively, the speculum is removed and Smith's lid control substituted, a double hook being used instead of Smith's single one.

The cortical matter is removed, the iris replaced and the toilet of the wound performed by means of the McKeown's irrigator. This was introduced by C61. Elliot some fifteen years ago and it is difficult to speak too highly of its value if used intelligently. The surgeon regulates the pressure by passing the tube between the finger and thumb of the left hand, the other fingers of which are engaged in controlling the orbicularis. A fairly full stream should be played on the edge of the wound and made to enter the chamber; whilst doing this, light, stroking movements are made with the nozzle from just behind the corneo-scleral margin to the centre of the cornea. These movements are made in each meridian in turn, and as the result small islands of cortex appear in the pupil and are at once washed out of the chamber by the stream. Should a cortical mass resist being dislodged by light massage, a clean nozzle is introduced into the chamber and the stream played directly round it. When all the cortex has been removed a light stream directed on to the iris causes its perfect replacement. In this way evacuation of the cortex and replacement of the iris is effected with the minimum of pressure on, and trauma to, the ocular tissues. Great care is taken during irrigation that fluid does not leak from the tube on to the fingers and pass from them into the conjunctival sac or chamber. A spatula is only introduced if there should be any doubt as to the proper adjustment of the wound edges. A drop of atropine solution is next instilled, the eye closed and the external canthus pulled outwards whilst the section is very lightly massaged through the closed lid.

Importance is laid on not bothering the patient with instructions during the operation, but if he is frightened and nervous he is asked questions about his domestic affairs or other subjects of interest to him in order to take his mind off the operation.

Should vitreous threaten or escape, the lid is at once pulled forward on the hook and the operation proceeded with, care being taken to see that all the vitreous has been reduced before closing the eye.

The eye is dressed on the second day when the un-operated-upon eye is released and unless the pupil is wide three instillations of atropine are given, a pause of five minutes being made between each instillation. The dressing is removed on the third day and a goggle substituted. During the subsequent course of the case atropine is used until the pupil becomes wide, but if signs of atropine irritation appear a change is made to hyoscine. If there is any trace of cortex or any sign of exudation in the pupil, subconjunctival injections of saline are given and dionine instilled. — *The Indian Medical Gazette*.

THE ANTISEPTIC

JANUARY, 1919.

The Prevention of Dental Diseases..



THE question of the prevention of dental diseases is one of vital importance to the public and the dentist alike. Dental diseases are very common among people all over the world and some of them such as caries, pyorrhoea alveolaris, tartar, etc., can be much better prevented than cured. Dr. J. G. TURNER, F. R. C. S., L. D. S., has contributed a very valuable article in the *Journal of State Medicine* on the above subject and we wish to bring some of the important facts to the notice of our readers concerning the prevention of some of the dental diseases.

Caries, which is one of the common diseases of the teeth, is pre-eminently a disease of young life since, from the moment of eruption, the teeth are exposed to conditions favourable to it.

Dental caries has been shown by experiment to depend on two factors: (a) the presence of carbohydrates (starches and sugars) and (b) the presence of germs. The starches are converted to sugar by the saliva and the sugars to acid by the germs. The acid attacks the enamel and when this is perforated other acids and germs attack the dentine. The incidence of this disease is said to depend on the fineness or otherwise of the carbohydrate food consumed, and on the opportunity of stagnation offered by the food. It is a well-known fact that caries always occurs in stagnation areas such as in the fissures of the crowns of the teeth, at the necks of the teeth, and on the buccal and distal surfaces of the last molars where the movements of the cheeks are not felt. It occurs also where plates or their clasps lie against the teeth, at the edges of fillings, crowns and caps. There are also two common conditions favouring germ-carbohydrate stagnation and consequent caries, viz., hypoplastic teeth and deformities of the dental arches accompanying mouth-breathing. Hypoplastic teeth are most commonly permanent teeth injured during formation by bad feeding in infancy, such as by substitution of patent foods for mother's milk; less commonly, but very commonly in fact, they are permanent teeth which have been injured during formation by abscesses of the temporary teeth. Deformities of the dental arches accompany-

ing mouth-breathing tend to crowd the teeth and render them irregular in position. This increases the stagnation areas and so the incidence of caries by making some of the teeth inaccessible to the natural cleansing movements of the lips, cheeks and tongue, and even to the tooth-brush. Such condition of the dental arches is an accompaniment of, perhaps a result of, post-nasal obstruction due to adenoids.

Pyorrhoea alveolaris is very frequently met with. It begins as an inflammation of the gum edge—a marginal gingivitis—which spreads to the periodontal membrane and the alveolar bone and gum overlying it, and often further to the general body of the bone. This condition is of local bacterial origin, influenced as are most bacterial diseases by the health, that is, the resistance, of the subject. Germs adherent to the neck of the tooth cause inflammation of the gum edge, marginal gingivitis. The incidence of pyorrhoea increases with the use of fine ground flour and other carbohydrates just as does that of decay of teeth, and here it is what stagnates at the necks of the teeth which does the damage. It is further comparable with dental caries in that it occurs in all artificial stagnation areas. Where plates lie against the gum, under the edges of ill-fitting crowns, and under the edges of badly-made fillings, especially of interstitial fillings, some degree of pyorrhoea is always to be found.

Tartar which also can be readily prevented is also a result of stagnation. It always appears where rubbing has been neglected or is impossible. The masticating surfaces of teeth unused and uncleaned, by reason of pain, soon become tartar-coated, whereas with teeth in ordinary use these surfaces are free from tartar. Tartar is a mass of germs hardened by deposition of lime salts from the saliva. Besides being unclean in itself, tartar always produces inflammation and often actual ulceration of the gum near it.

Of all the questions on the best way of prevention of the dental diseases above mentioned, the one of food is very important. Fine ground flour and sugar are the greatest enemies of the teeth. If we would revert to the coarse flour and comparatively sugarless days of about 200 years ago, we should abolish the greater part of dental caries. Sweetened biscuits, buns, cakes, pastry and all sticky sweets such as chocolate, should be avoided, especially by children, as these encourage stagnation areas for the breeding of germs. Something also can be done in the matter of bread. Stale, dry bread eats far cleaner than new bread. It mixes easier with the saliva and sticks to the teeth less readily. Much has been said about the value, as a preventive of teeth decay, of giving the jaws exercise by eating hard food. The teeth are

said to be hardened and the jaws enlarged. A considerable point is also made of the cleansing power of hard food on the teeth. This, unfortunately, is limited to the masticating surface of the teeth and the ultimate cleanliness of this surface depends not on the initial hardness of the food but on whether it retains this character throughout. Thus, tough meat will leave a cleansed surface, but a hard biscuit, which ultimately becomes pap, will leave an unclean surface and encourage caries and pyorrhoea. Eating fruits as a cleansing agent of teeth is highly beneficial in preventing caries, etc. For example, an apple eaten after a meal, both by its texture and by its acid juice, is a decided cleanser. But the chief means of prevention of caries is artificial cleansing with the tooth brush and silk thread. As the brush is used today by many of the people, it is a mere make-believe, reaching only the prominent parts of the outer surfaces of the more forward teeth—parts which, so far as prevention of decay is concerned, are efficiently rubbed by the lips and cheeks. The part of the crown just by the gum (neck), the whole of the lingual surfaces and generally the entire crowns of the back teeth are untouched, and then it is concluded that cleaning does not prevent decay! The answer is that there was no cleaning where decay had occurred. It is possible to teach the proper use of the brush and, in spite of the use of fine-ground flour and sugars, to avoid the greater part of the incidence of caries. The training of nurses to teach children how to clean their teeth is important and should be included in their training course. At all schools a nurse's time would be well spent in teaching and supervising the cleaning of children's teeth, and teaching should be begun at the earliest possible age. The brush should be small, a large brush cannot be moved in the mouth. It should be straight, with stiff short bristles, and ridged on its working surface. The end of soft long bristles remain unmoved on the tooth while the back of the brush moves to and fro. Ridges allow of the larger bristles getting to some extent to the sides of the teeth when the brush is worked up and down. In using the brush most people entirely miss the back teeth. The cheek side of these teeth can be reached by using a short-bristled brush and keeping it well on the teeth, while the handle is made to draw aside the angle of the mouth. The most important point in the use of the brush is to be sure that the necks of the teeth are reached inside and outside. To reach them outside all that is needed is to tilt the brush so that in cleaning the upper teeth the back of the brush faces almost upwards, and only the upper edge is used, and in cleaning the lower teeth to tilt in the opposite way till the back looks almost down and only the lower edge is used. In cleaning the insides of the upper teeth, the point of the brush only is of use. To clean the insides of the back teeth the point is dipped for lower and

elevated for upper teeth, while the handle is carried to the opposite side of the mouth and horizontal to-and-fro movements made parallel with the arch of the teeth with the bristles at a right angle to the inside tooth surfaces. For the insides of the front teeth the handle is held as far back on to the face as can be done.

As with caries, pyorrhoea and tartar may be kept at bay by constant cleanliness attained by the same method as we have referred. If daily rubbing of the necks of the teeth be practised there will be no pyorrhoea consequent on marginal gingivitis. The treatment of both caries and of pyorrhoea, when well established, should be carried on somewhat on the lines of forestry, removing some to isolate others. An isolated tooth is thereby made easier to fill and to clean. But where a tooth cannot be kept clean it is better to extract. At present there is no useful teaching in tooth-cleaning, and very little useful practice. It is in fact difficult both to do and teach, but we hope for the coming generation it offers a reasonable hope of prevention alike of caries, pyorrhoea and tartar.

Business Notices.

The Editor's Office is at RAMABHAVAN, Poonamallee High Road, MADRAS.

The Manager's Office is at 323, Thambu Chetty St., Georgetown, Madras.

All literary communications and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7-8 or 10 s.,

Half page Rs. 4-8 or 6 s., a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following Journals:-

The Polyclinic. The Bristol Medico-Chirurgical Journal. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Monthly Cyclopædia of Practical Medicine. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Medico-Surgical Journal. The Journal of the Out-Door Life. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. Radium. The Canadian Medical Association Journal. The Calcutta Medical Journal, Le Monde Medical.

THE ANTISEPTIC.

Vol. XVI.]

FEBRUARY 1919.

No. 2.
Annual Subscription Rs. 5

Original Articles.

THE POST-OPERATIVE TREATMENT OF ABDOMINAL CASES.

BY

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HE ordinary case with an uncomplicated operation goes from the operating table in good condition. The less treatment the patient receives after laparotomy the better. There is a slight degree of depression, scarcely worth being called shock, which requires only that the surface of the body shall not become cold. The patient should be taken to a quiet, not too light room, and laid supine until the anesthetic depression has subsided. Then the head may be elevated. There will be some abdominal pain, some thirst, some nausea and some insomnia the first night. These usually are of so little consequence as to require no treatment. As soon as the nausea has subsided, which should be by the day after the operation, the patient may be given fluids by mouth and the elevated head position should be instituted. The head may be elevated so that the trunk inclines at an angle of 45 degrees above the horizontal. By the second day milk may be taken if all nausea has subsided. After this the diet may be steadily increased.

The elevated-head position may be maintained as much as the patient desires through the day. For sleep he should endeavour to lie supine with a pillow for the head. For maintaining the elevated-head position the head of the bed may be raised or an inclined plane placed behind the back. To prevent the patient from sliding down in bed a second inclined plane may be connected with the first. The second plane should accommodate itself to the thighs and legs, the apex being at the knees. An exaggerated position is not called for. The elevation should be about 45 degrees above the hori-

ventral. It need not be more than this. Raising the head of the bed 45 or 50 cm. (18 or 20 inches) on two chairs suffices. A pair of pillows below the buttocks may be fixed with a bandage to prevent the patient sliding downward.

The patient may be allowed out of bed in a chair on the eighth or tenth day; at the end of two weeks he may be allowed to help himself out of bed; and in twenty-one days he may be permitted to go about his business. In the case of wounds which have been drained, the patient should not be allowed to walk until the wound is entirely healed.

Special treatments are advocated by many surgeons. In some hospitals certain routine measures are followed in all cases. This is necessary only in such institutions as cannot guarantee intelligent supervision over post-operative cases. In the presence of discriminating supervision, each case should receive the treatment indicated for that particular case.

The placing of a *rectal tube* after the patient has been put to bed gives comfort in many cases. It may be left in for two days. If it causes discomfort, some olive oil injected through it will soothe the bowel. The tube permits the escape of gas without muscular effort. It does no harm and may be of great benefit.

J. A. Sampson conceived the idea of *increasing abdominal pressure* by means of sand-bags placed on the abdomen. Sand-bags measuring 15 by 30 cm. and weighing 2 to 3 kilos (5 pounds) are used. These sand-bags are made flat and sewed through to keep their shape. Two bags are placed on the abdomen, one on either side of the median line, and held by the binder. The weight of the bags causes slight compression of the abdominal blood-vessels, distension of the intestine is counteracted, gas is caused to move onward toward the anus, and the patient has a sense of comfort and security. After the removal of large tumors or large amounts of fluid, this treatment is indicated.

The use of *morphin* after abdominal operations requires discrimination. If a patient is not going to have pain or shock, it is not necessary. It may be given as a routine in doses of 0.005 gm. (1/12 grain) every three hours while the patient is awake during the first two days. As a rule the patient is better off without it; but as a rule morphin will do less harm than pain, restlessness and sleeplessness.

It is not necessary that most patients should have a *bowel movement* on the second or third day, after the operation. Usually if left alone the bowels will move by the fourth day. If the patient is doing well, there is no harm if the bowels do not move till the fifth or sixth day. A dose of paraffin oil may be given if necessary. A particularly effective cathartic at

this juncture is a dose of 45 cc. (1½ ounces) of castor oil and 4 cc. (1 dram) of compound tincture of cardamom.

The post-operative administration of *oxygen*, begun immediately, hastens recovery from ether and diminishes the liability to vomiting. The inhalation of the fumes from vinegar relieves the ether nausea.

Post-operative complications, requiring treatment, arise in many cases. They may be mild or so severe as to threaten life. None of the measures described below are needed in the ordinary uncomplicated case.

Vomiting and nausea have an intimate relation to the anesthetic. It is possible to employ anesthesia that will not cause vomiting. Taking fluids too early into the stomach should be guarded against. Vomiting is easily excited after ether anesthesia. Commonly it is due to the reflex or direct mechanical disturbances incident to the operation. Vomiting is least apt to occur if the minimum of damage has been done to the bowel during the operation. If the vomiting is anticipated in a patient who has had ether, it may be prevented by passing the stomach tube before the patient regains consciousness and washing out the stomach. This may be repeated if nausea develops.

Nausea due to abnormal peristalsis may be serious. By placing the patient in the elevated-head position, downward drainage may be established. An evacuation of the bowels, secured by enema, will often stop the nausea. When vomiting of the contents of the small intestine is troublesome, lavage of the stomach is essential. This should be repeated as many times daily as necessary.

The surgeon should assure himself that there is no intra-abdominal condition which should be relieved. Gauze or other drainage material may cause irritation to the bowel and reflex vomiting; or it may be responsible for actual mechanical obstruction. A collection of pus may have been overlooked. Very commonly persistent vomiting is due to a spreading peritonitis, and will not subside except by direct treatment of that condition. Vomiting which is intractable is usually due to peritonitis or intestinal obstruction, and the surgeon should address his attentions to these conditions rather than to the stomach.

It is rarely worth while attempting internal medication for nausea. Counter-irritation of the skin of the epigastrium by mustard is of help in some nervous cases. Fresh, cool air admitted to the lungs, or the inhalation of oxygen, sometimes gives relief. Gastric lavage should always be regarded as the main reliance of treatment.

Meteorism or gaseous inflation of localized segments of bowel should be prevented by the precautions already described. Minimize the damage to the peritoneum and bowel. Pre-operative purgation is a common cause. Hot

water by mouth in 4 cc. (1 dram) doses, as hot as the patient can bear it, will bring up gas. By elevating the upper part of the trunk, placing the patient in the semi-upright position, the expulsion of gas is facilitated. The relaxed abdominal muscles may be caused to contract and press out the gas by applying heat. This may be in the form of hot stupes, or dry heat. The latter may be applied by means of the hot-air box.

A distended large intestine requires relief by an enema and the restoration of peristalsis. If the ordinary enema of soap and water does not accomplish it, a more stimulating one should be used. Turpentine, 4 cc. (1 dram) to 500 cc. (1 pint) of water may be added. Powdered alum in the same amount may be used. A combination much employed is made of magnesium sulphate, 30 gm. (1 ounce); glycerin, 30 cc. (1 ounce); turpentine, 4 cc. (1 dram), and water, enough to make 120 cc. (4 ounces). J. C. Munro recommended a mixture of 500 cc. (1 pint) of milk, 500 cc. (1 pint) of molasses, and 15 cc. ($\frac{1}{2}$ ounce) of turpentine. A tube may be passed occasionally to assist the expulsion of gas.

For meteorism, the alum enema is most effective. The important thing is that gas shall be expelled. When the measures for the treatment of meteorism and vomiting fail to give relief in twelve hours, the surgeon should realize the strong probability of spreading peritonitis or obstruction being the cause of the trouble.

Eserin salicylate in doses of 0.001 to 0.0015 gm. (1/60 to 1/40 grain) is useful in some cases. It acts only on the small intestine and an enema should be given four hours later to empty the large bowel. Hormonal in doses of 15 to 20 cc. (4 to 5 drams) is perhaps still more effective, as it acts on the whole intestine. Neither of these should be given in well-developed peritonitis or obstruction.

Nothing so effectively stimulates peristalsis as food. It should be given as soon as the stomach will tolerate it. It will be found to be the best gas eliminant.

Acute dilatation of the stomach may be prevented, diagnosed and cured by the stomach tube.

Pain following operation usually subsides with the meteorism. During the first night it may be so severe as to justify an injection of morphin. The drug is best not to be repeated.

Shock in a slight degree needs only the ordinary post-operative care of the patient. Its degree cannot always be predicted, and it is a wise rule to be prepared for it in all cases. Its treatment in abdominal cases is not much different from that in other cases. *Proctoclysis*, the slow instillation of warm glucose or salt solution into the rectum, is of special service in shock of

abdominal origin. If the patient can take water by mouth it is better so given.

Some surgeons combat shock by filling the peritoneal cavity with warm saline solution. This is best done by placing a soft catheter behind the omentum, or through it if preferred, so that its tip lies above the transverse mesocolon. The peritoneum and transversalis fascia are snugly closed about the catheter. Saline solution at a temperature of 45° C. (112° to 114° F.), is then allowed to run in from a height of about 1 meter. Five hundred or 1,000 cc. (1 or 2 pints) will fill the abdomen. The tube is then withdrawn and the closure of the wound completed. This treatment gives heat and pressure to the region of the hypogastric and solar plexuses, and vasoconstriction results.

A routine practice of some surgeons is a method advocated by Clarke for filling the large bowel with saline solution. At the conclusion of the operation, while the abdomen is being closed, the patient is placed in the lowered head position, 1 to 2 liters (1 or 2 quarts) of warm saline solution are allowed to run into the rectum. This fluid passes through the whole large intestine. Clarke employs this method after the treatment of peritoneal adhesions, before closing the abdomen, and is able to see the fluid pass as far as the cæcum and sometimes into the ileum, and the colon drop back into its normal position by the weight of the water. If the patient is carefully handled, and the pelvis kept slightly elevated, the fluid is retained and absorbed. The value of this treatment is very doubtful.

Heat applied to the abdominal wall has the effect to increase salutary hyperemia and peristalsis. A. Strempel advocated heat by means of the hot air box or the incandescent electric light box—500 candle power. It is claimed that it counteracts the tendency to shock, promotes peristalsis, diminishes adhesions, and inhibits peritonitis. A dry air temperature of 130° C. (265° F.) may be used for fifteen or twenty minutes twice daily. A temperature of not more than 55° C. (131° F.) may be used for one or two hours at a time, with intervals of three hours, day and night. Other surgeons use it only once or twice a day. Without any other post-operative treatment it is found that flatus is usually passed during the first twenty-four hours.

Thirst, after laparotomy, is sometimes distressing. If the patient is not nauseated he may drink freely of water that is not cold. If the patient is still nauseated, thirst cannot be slacked with drink. Ice may be taken into the mouth, or the mouth rinsed with a cooling taste of lemon juice. The treatment of thirst consists in supplying fluids to the tissues, and this is done by proctoclysis, hypodermoclysis, infusion, or the other means described for restoring body fluids. It is not wise to give a vomiting patient fluids which do not quench the thirst and which do aggravate the vomiting. It should

be remembered that water is not absorbed by the mouth, stomach, or even the upper part of the intestine.

Retention of urine should not be confused with scantiness of urine. After laparotomy the secretion of urine is diminished. If the patient is kept dry about 360 cc. (12 ounces) are passed the first twenty-four hours. This should be increased by the use of water by mouth and salt solution to at least 500 cc. (1 pint). If urine is not voided in the first eighteen hours some artificial encouragement should be given, such as a warm enema or hot application to the pudendal and pubic regions. If these fail, and the patient feels that urine could be passed in the sitting or standing position, it may be tried. With a firm adhesive strapping to support the wound the patient can do it no harm by standing up to urinate.

The passage of small quantities frequently means injury to the bladder, or indicates the overflow from a full bladder which should be catheterized. Catheterization otherwise should be reserved as a last resort. A record of the amount of urine voided should be kept. The catheter should be passed carefully. For lubricating the catheter a safe mixture is 25 per cent. Argylol in Glycerin.

Other complications which may arise require their own treatment. Post-operative hemorrhage, peritonitis, ileus, acute dilatation of the stomach and phlebitis, may require attention. Post-operative hiccup is to be combated by removal of the cause (usually peritoneal irritation) and by sedative measures.

Acidosis should be treated by sodium bicarbonate and the other alkalis by mouth, and in severe cases by rectum and intravenously.

Post-operative *pneumonia* should be treated by giving the patient fresh air. The shoulders should be slightly elevated, concentrated nourishment should be given, the surface of the body should be protected from chilling, and nothing should be permitted that depresses the heart. It is possible that some day these cases may be saved from a fatal termination by insufflation of the lungs with fresh air. Pneumonia is to be prevented, by sparing the patient from exposure to cold before, during, and after the operation; by careful anesthetization; by cleanliness of the mouth; by having the patient breathe deeply as an exercise two or three times a day after the operation; and in the case of old people, by avoidance of the recumbent position.

Remarks.—In general, most abdominal cases require no special treatment. It is best that the patient should not be pestered with attentions. A small dose of morphin the day of the operation and, if at all indicated, the night following the operation, should make the patient comfortable. The character of the operation and the amount of traumatism that has been inflicted are the chief determining factors. The patient should be allowed to

change his position as he will. The most comfortable position is the most restful. Catharsis before and after operation is to be avoided if possible.

The time for getting up after abdominal section must depend upon many conditions. A clean, undrained abdominal wound is well united in ten days. The sutures may be removed on from the eighth to the tenth day. Broad adhesive straps should support the wound and hold on the dressing. With such adhesive straps a comfortable patient may be allowed up in a chair any time from the seventh to the tenth day. No harm need be done by sitting up even earlier. Weak patients should remain in bed longer.

An average healthy patient may be permitted to walk two days after he begins to sit up. The adhesive straps which support the abdominal wound and prevent stain upon the union should be worn for a month. Care should be taken that the patient abstains from straining for two or three months.

Post-operative feeding must vary for each patient and the nature of the operation. In operations not involving opening the alimentary canal, water in small doses may be taken after twelve hours. On the day following operation fluid nourishment which is least prone to fermentation and putrefaction may be given. Whey, broth, strained soups, orange juice, grape juice, lemonade, peach juice, malted milk, albumin water, and glucose solution may be given in small doses. At the end of forty-eight hours, if no signs of peritonitis are present, milk may be added. A small glass of milk (120 cc.) may be given every four hours during the third day after the operation, and this amount may be doubled on the next day. Milk may alternate with the other fluids. Solid food, such as cereals, dry bread and soft egg may be allowed on the fourth day, and if no complications develop, full diet may be permitted on the fifth day. All food should be in moderate amounts. It should be well chewed. And the patient should preferably eat what tastes good.

For *emergency feeding*, when the conditions are not normal, when the patient cannot be given the above diet, and nourishment is necessary, other expedients must be employed. These are intravenous, subcutaneous and rectal nourishment.

* GLAUCOMA.

BY

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Glaucoma is one of the most important diseases of the eye, owing to its serious nature, the difficulty experienced in its treatment, and the certain

* Read at the All-India Sub-Assistant Surgeons' Conference held at Calcutta and sent to *The Antiseptic* for publication.

result of complete blindness if left untreated. Its accurate recognition is of the greatest importance for the general practitioner, more so because here prompt and proper therapeutic interference can save everything, but a false diagnosis and improper treatment may destroy everything. I have seen some cases of glaucoma which have been incorrectly diagnosed and come only when help is no longer possible.

Cases of inflammatory (*acute*) glaucoma are often confounded with iritis and irido-cyclitis, and are accordingly treated with atropine which has a particular deleterious action in glaucoma. We all know the three axioms, avoid Atropine in glaucoma, Eserine in Iritis and Lead in corneal ulcers. Cases of acute glaucoma have been mistaken for gastric derangement while the ocular symptoms were regarded as mere coincidences as a cold in the eye, Neuralgia. In rare instances glaucoma has been mistaken for conjunctivitis. Cases of glaucoma simple (chronic) which present no external symptoms of inflammations are sometimes regarded as commencing cataract and the patients are put off in expectation of the cataracts becoming ripe so that they delay until it is too late.

Glaucoma (seagreen).—This name was given to this disease by old writers on account of the green reflex seen in the pupil in some cases; but this sign is not distinctive of glaucoma as it is seen in senile Lens, and Immature cataract. Glaucoma may be divided into *Primary* and *Secondary*. *Primary* again into the *Acute or Inflammatory* and *Simple or Non-Congestive or Chronic*, but these varieties are liable to run into each other; chronic simple may become congestive and congestive may after a time take on the chronic simple form.

Primary glaucoma consists of those cases in which no previous disease of the eye can be found as a cause.

Secondary, those resulting from some other ocular disease as Iritis or injury but in the G. O. H., Madras, the chief variety of Secondary Glaucoma seen is Glaucoma secondary to swelling of Lens.

The chief variety is pearly sectoral lens and morgagnian cataract in which the cortical portion of lens becomes liquefied.

Glaucoma is essentially a disease of late middle life and is rarely seen before the age of 45 except in the Secondary form.

Glaucoma is a bilateral disease, almost always attacks both eyes; they are but rarely attacked at the same time, the disease of the 2nd eye follows, months or even years after that of the 1st.

Aetiology.

The primary cause of glaucoma remains to a great extent obscure.

The chief and essentially characteristic symptom is the increase of intra-ocular tension, i. e., increased hardness of the eye-ball at some period in its course. All the other symptoms of the disease result from this one.

In the normal eye there is a mean kept up between the secretion and excretion of the intra-ocular fluids. Glaucoma is associated with an increase of intra-ocular tension due to an excess of fluid in the eye; this must be produced by hypersecretion, diminished excretion or a combination of both.

We all know that the intra ocular fluid is secreted by the ciliary processes, and that the main outlet for the fluids from the eye is at the iridic or filtration angle.

The only constant pathological change found in nearly all cases of glaucoma is the obliteration of the iridic angle by the application or adhesion of the base of the iris to the posterior surface of the cornea near the sclero-corneal junction.

There is a theory that glaucoma is always preceded by catarrhal inflammation of the uveal tract near the iridic angle, especially the ciliary portion, and that the swollen ciliary processes push the iris base towards the cornea and the increased vascularity of the ciliary processes produces hypersecretion. Priestly Smith has a very convincing theory that the factor most likely to produce glaucoma is obstruction of the circumlental space. Circumlental space is the space between the lens and ciliary processes and when this space is closed, the secretion of fluid into the vitreous, being unable to pass into the anterior chamber, distends the vitreous chamber and pushes forward the curtain composed of the lens, suspensory ligament and ciliary processes and the iris. An actual increase of tension, however, is not yet present in such an eye because the sinus of the chamber is still present. An acute attack of glaucoma takes place from closure of the sinus of the chamber by one of the following existing causes as disturbances in the circulation of the blood, or dilatation of the pupil.

The lens grows throughout life; hence the circumlental space is encroached upon with age and this may account for glaucoma being as a rule a disease of advanced life, the more frequent occurrence of the disease in Hypermetropes inducing congestion of the ciliary processes owing to exaggerated use of the ciliary muscles.

There are several other theories. I will not dilate upon them.

Abnormal rigidity of the sclera and obstruction of the vena vorticos.

Heredity is said to play an important part. Exciting causes are, as already said, disturbances in the circulation of the blood and dilatation of the pupil.

Loss of vaso-motor control in the body or in the eye such as exposure to cold, starvation, sleeplessness, grief, excitement, worry, alcoholism, fatigue.

It occurs in patients who are the subjects of gout, heart disease, kidney disease, pulmonary disease and habitual constipation.

A few cases of acute glaucoma came into the Government Ophthalmic Hospital who had an attack of the recent epidemic influenza.

Glaucoma has been produced by the dilatation of the pupil following the administration of atropine, cocaine, homatropine.

When one eye is glaucomatous, the sound eye is examined as far as possible without any mydriatic, with the electric ophthalmoscope as, in a case or two, after one instillation of Homatropine the patient developed in a few minutes acute glaucoma and that, too, before any ophthalmoscopic examination was made; we always make it a routine to instil Eserine to the refraction cases who had homatropine, before they go home (for adults over 30).

Professor Arthur Thompson's pump action theory was explained and how it seemed probable that osmotic action plays a large part in the transfer of fluid from the anterior chamber into the canal of Schlemm and the iris veins and that this action is strongly reinforced during the working hours by the pump action.

Signs and Symptoms of Acute Glaucoma.

PRODROMAL STAGE.

(1) *Increase of Presbyopia* from pressure on ciliary muscle and nerve, and through diminution of the power of accommodation. Consequently the patient gives a history of changing frequently his reading glasses.

(2) *Photopsia*—subjective sensation of light. Flashes of light before eye as compared with lightning or a ball of fire, before eye; or dancing fire flies.

(3) *Rainbows round lamp* from oedema of cornea; we see this also in conjunctivitis if there be mucous across cornea.

(4) *Objects seen as through a fog or cloud* from pressure on retinal vessels.

(5) *Pain in the eye and headache accompanied with vomiting.*

An acute attack is characterised by pain radiating from the eye, travelling alongside of the head. There is slight fever and vomiting at times; this is likely to be mistaken for a gastric derangement. Vomiting very frequently accompanies acute glaucoma. There may be intermittent attacks of severe glaucoma. The violent pain in inflammatory glaucoma is excited by the compression of the extremely numerous sensory nerves of the ciliary body and iris.

Acuity of vision is diminished by changes in the media (cornea, aqueous, lens and vitreous) and by direct pressure upon the optic nerve fibres and their consequent atrophy. Here a word about vision; when central vision is hand movement, the vision on the temporal side may be fingers at 1 or 2 metres.

The field of vision can be roughly mapped out in uneducated people by the hand movement test recording results up, down, in and out. At the commencement nasal field will be limited. In the educated, Snellen's perimeter is used. The hand movement test is a very good one which can be practised by all. Supposing I wish to take the field of the right eye of a patient, I get his left eye closed, closing my right eye. I put the index finger of one hand of mine in front of the patient's eye and ask him to be steadily looking at the index finger; then I put my index finger of the other hand and see how far I could see the second one, compare it with the patient's and put down the result, in, out, up, down. This is applicable to persons who have got some vision.

Conjunctiva. In acute cases there may be oedema of the lids, chemosis of conjunctiva injection dusky red in colour.

Cornea may be steamy or hazy or oedematous due to oedema of corneal tissues and epithelium.

Anæsthesia of cornea arises from oedema of cornea compressing the endings of the nerves; i. e., if you touch the patient's eye with a little cotton wool, the patient does not feel it.

Indistinctness of the pattern of the iris is similarly due to oedema.

Dilatation and inactivity of the pupil the result of paralysis of the ciliary nerves.

The pupil is generally oval vertically.

Greenish appearance of the pupil.

Secondary cataract; greenish, bluish or smoky in colour; can be diagnosed from appearance and history.

Anterior chamber is shallow from pushing forward of the iris and lens.

Tension of the eye-ball. As I already said the chief and essentially characteristic symptom is the increase of intra-ocular tension.

Increased intraocular tension may not always be present in the same degree nor at every hour of the day. There will be diurnal variation.

Tension may be high at night or early morning on account of the dilatation of the pupil.

Tension may be taken digitally and also by Tonometer.

If the patient is asked to look down, and if the tips of the index fingers be placed close together on a normal eye-ball and gentle pressure be made with them alternately, a sensation of fluctuation is given to the fingers.

The glaucomatous eye ball is harder, slight rise of tension is noted by + 1, still higher T + 2, + 3 denotes stony hardness of the eyeball.

Schiot's tonometer and Maclean's tonometer are valuable instruments for delicacy and accuracy; it is much superior to the digital method.

The normal tension with the Tonometer is 15-25 M M Hg. In using the Tonometer, it is essential that the instrument should be placed vertically and that its foot plate should rest on the cornea.

We have to take into account the curvature of the cornea in relation to that of the foot plate. So the Tonometer reading is unreliable in buphthalmus, staphylomatous eyes and conical cornea.

Ophthalmoscopic Examination.

At a very early stage, the only thing one can notice is a slight bend or kink in both veins and arteries just inside the edge of disc. This kinking or bending is seen earlier in the veins than in the arteries; sometimes the kinking is only observable in certain direction and as time passes on, it becomes more general until the whole circumference of the disc is involved. When the vessels pass over the edge of the papillæ to go to the retina, they show as bending or, in deep excavations, an interruption of their course, so the vessels in the retina and disc are never seen clearly at the same time, since they lie at different depths, and hence have a different refraction. When the vessels on the retina are seen, the vessels on the floor of the excavation look quite pale and hazy. So the vessels on the disc require concave glasses in the ophthalmoscope sight hole according to the depth of the excavation. In some cases, calibre of the arteries is contracted while the veins are distended and tortuous, in fact, we see at times a whole convoluted mass of vascular loops lying on the floor of the excavation or pushed to nasal side.

Pulsation in the veins is often observed and sometimes a pulsation in the arteries within the papillæ.

Arterial pulsation is a sure sign of glaucoma as said by some ophthalmologists but it is seen in aortic regurgitation. Pulsation of veins is sometimes seen in the normal eye.

The nerve fibres, too, like the blood vessels, undergo flexion or interruption at the edge of the papilla.

If the cupping is deep and total, it can only be a glaucomatous one.

Glaucomatous halo, when glaucomatous excavation has lasted a long time, the papilla is usually found to be surrounded by a white or yellowish areola which is an atrophy of the choroid about the disc. In the later stages one sees the atrophy of the optic nerve fibres which is most important so that papillæ become white.

Glaucoma fulminans in which incurable blindness in conjunction with the most violent symptoms of inflammation may develop within a few hours. This is a very rare affection as far as I know.

Diagnosis from 'Iritis'

In Iritis

- (1) Pupil is contracted.
- (2) Synechiae may be present.
- (3) Tension nearly normal.
- (4) No cupping
- (5) Cornea sensation normal,

In Glaucoma.

- 1. Pupil is semidilated.
- 2. No synechiae
- 3. Tension is always markedly increased.
- 4. There may be bending of the vessels or cupping.
- 5. Cornea anaesthetic.

When you find a pupil semidilated and cornea anaesthetic, think of glaucoma. These are very important signs.

From optic atrophy, the contraction of the field is concentric and there is a marked loss of the colour sense from the earlier stage. Cupping is shallow in optic atrophy; the disc is white in colour.

Chronic glaucoma (also known as simple or non-congestive) includes those cases in which the disease often progresses in an insidious manner extending often over several years without pain or evidence of congestion. There may be slight undue tortuosity of the perforating vessels or anterior ciliary vessels. The anterior chamber may be shallow, the pupil sluggish and dilated. This variety can only be diagnosed by ophthalmoscopic examination; the most important sign is deep excavation of the optic disc. Increase of tension is present only at intervals, so it may be necessary to test the tension at different times before a decision can be arrived at; but in most of the chronic cases I have seen, increased tension was invariably present, as most of the cases came in a late stage.

The symptoms are gradual diminution of vision and at the same time contraction of the field of vision especially at the nasal side, the latter symptom being given out by only exceptionally intelligent people.

This is the variety that is mistaken for cataract. In cataract the field is not contracted; this is very important, and I request you to remember this.

The triad of glaucoma (three objective signs) is the limitation of the field of vision which begins in the majority of cases on the nasal side, the diminution of acuity of vision, and the cupping of the disc.

Glaucoma absolutum, in which the eye is blind and as hard as a stone. Later on degenerative changes make their appearance in the blinded eye, iris becomes atrophied, lens opaque, hemorrhage in chamber, cornea becomes cloudy, equatorial scleral staphylomata; the final outcome is atrophy of the eyeball; sometimes ulcer serpens develops with Iridocyclitis and Panophthalmitis.

Treatment.

Preventive Treatment. Hypermetropes should always wear correcting glasses, to avoid congestion of the ciliary processes, by overstrain of accommodation. When a patient complains of headache his refraction should be tested. His distant vision may be 6/5 but there may be latent hypermetropia. Presbyopes should never read or do close work without their glasses.

Col. Elliot points out, every means should be taken to prevent loss of vaso-motor control and to avoid the factors that make for the latter and the factors that cause autogenous intoxication; viz., over-work, worry, nervous and bodily exhaustion, improper diet, all depressing conditions, including concealed sources of infection in the teeth, as pyorrhea alveolaris, caries tooth, tonsils, nasal sinuses and intestinal tract. One should avoid getting mydriatic over 40 unless oph. examination is made beforehand as the mydriatics are as prejudicial in glaucoma as the miotics are useful.

Medical Treatment. The local treatment is directed to removing the iris from the iridic angle by contracting the pupil. The drugs used are Eserine and Pilocarpine. As a routine treatment, Eserine Salicylas 2 grs to one ounce; one instillation, 2 insts or 3 insts as necessary; rarely, even Eserine 3 insts twice a day, if necessary. In cases where I give more than one instant, I always close the canaliculi as we all know that eserine has a depressing effect. If the pupil contracts to Eserine, it is a favourable case. It is better that an instillation be given before the patient goes to bed, as at night the pupil dilates. Very often we have heard of patients going asleep and getting up with a bad headache. Eserine when continued for a time is intolerable on account of headache it induces and the conjunctival irritation it produces. The routine medicinal treatment on admission, in G.O.H. is, purgative of senna and salt, leeches in congestive cases, Eserine drop, Morphia draught or Hypodermic injection as necessary unless contraindicated otherwise or Bromide and Morphia for neurotic patients, rest in bed, generous diet. This is only a palliative treatment.

Operative Treatment. Von Grafe in 1856 employed iridectomy for the first time, before that, cases were allowed to go untreated. This was one of the most pregnant discoveries in Ophthalmology and one which will for all time redound to the glory of Von Grafe as Fuchs says. There have been many operations devised from time to time.

Sclerotomy

Sclerectomy

Lagrange's Operation

Herbert's Operation

Fergus's Operation

Elliot's Operation. sclero-corneal trephining, the modern universal operation for primary glaucoma.

I will confine myself here to only Sclero-corneal trephining by Elliot, and Iridectomy. The motive of Col. Elliot's operation is to reach, tap, and sub-conjunctivally drain the anterior chamber with a minimum of injury to the structures of the eye ball. Primary glaucoma, that is, acute and chronic are as a routine measure done by Elliot's trephining. Before operation we prepare the patient according to Herbert's method, i.e., we give per chloride wash 1 in 3000 to the conjuncture for 1½ to 2 minutes as necessary. Hypodermic injection of Morphia, and Cocaine instillation as a rule, but if the eye is very congested, sub-conjunctival injection of Cocaine and Adrenaline is given; if the patient is very nervous, chloroform is administered.

• A sterilised mask covering the lids and over the face of the patient is a very useful thing during operation.

When both eyes are to be done the eye with better vision is done first and then the other eye as the patient is invariably nervous for the 2nd eye, but both is done at the same sitting.

The eye is fixed in squeezers by a silk thread run round the lower half of cornea. Latterly the superior rectus tendon is seized in the grip of a pair of Prince's forceps, as a routine, this is very useful especially in dealing with a brittle conjunctiva. Immediately after operation palpation of the eyeball should show a marked diminution in tension.

• Some complications as met with in this S.C. trephine operations. *Button holing or injury to the flap.* A precaution generally adopted is that the flap should not be dragged or roughly handled especially when the conjunctiva is friable. There is the danger of perforating the flap by any sudden movement of the eye by the patient. The eventual result seems to be as good as no such complication has supervened. If after 24 hours after operation, the conjunctival tear did not heal up, we drop in Sol. Argent. Nitras 3grs. to 1 oz. or touch it with Sol Argt Nit. grs x to 1 oz. This complication is extremely rare indeed. *Superficial haemorrhage* obscuring the details may be controlled by pressure with small mounted cotton wool swabs soaked with Adrenalin drops and Adrenalin drops over the sclerals. *Intraocular haemorrhage* this is the most appalling disaster of glaucoma surgery. Nothing remains but to enucleate the eye-ball. *Loss of disc* in the anterior chamber does no harm provided that no focus of sepsis carried along with the disc.

Loss of Vitreous, The eye is closed.—In some cases even when the operation has been perfectly performed, the lens becomes cataractous probably from shifting its position and bearings—owing to the relief of tension. The early recurrence of an increase of tension arises from failure to enter the chamber freely or failure to remove a sufficient piece of disc at the time of operation in which case retrephining is done. The wound in the sclera may be filled up by the proliferation of inflammatory tissues derived from the episclera or blockage of the aperture by the

uveal tissue, lens or vitreous. If it be the uveal tissue, raising the flap without delay, and excising it, but this method seems to be difficult as there may be vitreous just behind the iris, so retrephining is done now-a-days. In gout there may be raised tension, the patient is advised to have more exercise and diet himself and massage of the eyeball.

The after treatment in Sclero-corneal trephining is instillation of Atropine (4 grs. to 1 oz.) as a routine commenced before the patient leaves the table and continued one, 2 or 3 insts until all fear of quiet iritis is past. Rarely Aspirin 10 grs. B.D. or once a day or Mist. Salicylas or Liq. Hydrargyri is necessary internally when iritis is threatened. When one eye is affected and operated, E 2 may be put in the sound eye as a precaution, as when both eyes are bandaged, dilatation of the pupil is caused and the sound eye may develop Glaucoma as there is also mental anxiety attending the operation. In congestive glaucoma, the result of operation is extremely favourable as tension is lowered, pain ceases in a few hours, cornea clears and vision improves; In painful, blind eyes, either S. C trephining to relieve pain, or enucleation, optico-ciliary neurectomy but enucleation is far easier than optociliary neurectomy.

In glaucoma due to syphilis—anti-syphilitic treatment is given. In hæmorrhagic glaucoma, no operation is done excepting enucleation, owing to the danger of increased hæmorrhage in old people with arterio-sclerosis.

Secondary Glaucoma.—Prolapse and incarceration of the iris in perforating ulcer or wound of the cornea; in such cases iridectomy is done. Complete or partial dislocation of the lens when lens is removed or paracentesis is done. Swelling of cataract after needling for soft cataract, or Traumatic cataract requires evacuation by washing or extraction as necessary. Impaction of a tag of capsule in section. Capsule is removed or trephining is done. In high tension eyes with impaction or adhesion of the pillars of the iris after Smith's expression operation or cataract Extraction; trephining is done below Old iritis with total posterior Senechia-Iridectomy. Glaucoma secondary to swelling of lens especially hypermature cataract, as pearly sectoral variety and Morgognian cause it; in such cases broad Iridectomy or the three cut classical Iridectomy is done mostly under ChCl_3 . Intraocular tumour requires excision of the eyeball. Repeated paracentesis of the anterior chamber is done in irido-cyclitis and couching of lens.

Here a word about massage of the eyeball; it is a very useful treatment both before and after operation, when the tension is keeping high. By this means, an eye can be quickly, painlessly and harmlessly repeatedly reduced, without the intervention of a surgeon for the patient can learn the manipulation without discomfort.

In Hydrophthalmus or Congenital Glaucoma, S. C. trephining is done.

If any of you desire to make a special study of Glaucoma I would refer him to the Text-Book for the Student of Ophthalmology by Lt.-Col. R. H. Elliot [A. K. Lewis & Co., 136, Power Shed, London, S. O.].

OUR CONTEMPORARIES.

MEDICINE.

Dyspnoea in Bright's Disease

BY

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I do not remember, in Bright's disease, to have met with dyspnoea which I could safely attribute to uræmia. I do not assert that there is no such thing as uræmic dyspnoea, but I do assert that this adjective is often applied to varieties of dyspnoea due to some quite different mechanism.

The varieties most frequently met with are the following:—In acute parenchymatous nephritis undergoing resolution, or chronic culminating in the large white kidney, the dyspnoea is due to pulmonary œdema or hydrothorax. The diminution of the urinary secretion leads to the retention of chlorides and water in the blood, so we get hydræmia and chloruræmia. When the kidney does not excrete water it does not get rid of the chlorides dissolved therein. On the other hand, especially since the researches of Didal, we know that an excess of chlorides in the organism causes retention of water and œdema. It follows that even when the kidneys have once again been restored to working order by decongestion of the glomeruli and freeing of the tubuli, they still will not allow the passage of water as long as the chlorides are in excess and as long as fresh chlorides are being introduced in the food. It is only when the chloride equilibrium has been restored by an achloride diet that the infiltrated tissues and the blood yield up their excess water to the kidneys, that dehydration takes place and that the dyspnoea disappears. There is nothing toxic in this mechanism; it is merely due to the breathing space being impinged upon by the water.

Interstitial nephritis which culminates in the small granular red kidney is associated with long-continued polyuria and but little œdema, is invariably accompanied by arterio-sclerosis and hypertrophy of the left heart, and gives rise more particularly to cardiac dyspnoea. This hypertrophy, it is true, may long allow of satisfactory respiration as long as the heart goes on working smoothly. Even in this case, however, some subjects complain of respiratory oppression, even when auscultation reveals nothing of note in

the lungs. This may be due either to the increased size of the heart pressing on the lung, thus reducing *pro tanto* its breathing capacity, or to the heart beating with more force over a greater area of the thoracic wall. This may cause a sensation of oppression which directs the doctor's attention to the heart and then to the kidneys. As a rule the oppression is not very intense as long as the hæmodynamic equilibrium is maintained.

But this hypertrophied heart may become insufficient either because its innervation is not in proportion to its size, or because the organ, being too large, is not adapted to the resistance to be overcome in the circulation, or lastly, as I have shown elsewhere, because the ventricular wall is bulged by the dilatation of the left ventricle and projects as a convex dome into the right ventricle, lessening its cavity and giving rise to venous stasis *a tergo*; or, lastly, because the myocardium has become sclerosed and has lost its contractile power. Whatever be the precise mechanism, the cardio-vascular equilibrium is disturbed, and more or less marked asystole results.

This cardiac dyspnoea is manifested by passive congestion of the lungs, with subcrepitant rales at the base, blowing respiration or respiratory silence and dullness. This is cardiac dyspnoea, and not renal dyspnoea.

Apart from this cardiac dyspnoea in the course of interstitial nephritis, we meet with two varieties of dyspnoea supervening without any previous pulmonary lesion which have been described as uræmic. There are attacks of asthma and Cheyne-Stokes breathing. The so-called renal, uræmic, dyspnoea is characterized by attacks of dyspnoea in every respect similar to essential asthma—sudden onset, violent oppression, thoracic constriction, incomplete labored respiration, slow whistling prolonged expiration, an asphyxial hue, dry rales and whistling rales, mucous and subcrepitant rales with catarrhal expectoration at the end of the attack, which lasts from one to several hours. At the expiration of this period things quieten down, breathing becomes free, and the rales disappear. These attacks may be diurnal or nocturnal, and recur at variable intervals; months, or, it may be, years may intervene between the attacks, or the interval may be one of a few hours only.

They are distinguished from essential asthma by their gravity and the more marked anguish that characterizes the oppression. The patient may succumb to an attack of syncope during the attack or to asphyxia from bronchial flooding. After repeated attacks the lungs may remain congested, and so give rise to permanent dyspnoea with paroxysmal exacerbations. If the heart be hypertrophied the attacks may be followed by pulmonary congestion, creating an obstacle to the pulmonary circulation, leading to fugitive or permanent venous asystole, thus upsetting the cardio-vascular equilibrium that has so far been maintained.

Are these attacks of asthma independently of pulmonary and cardiac complications, of toxic or uræmic origin? The sudden onset in interstitial nephritis and the absence of premonitory symptoms seemed to point to this explanation, but I do not accept it as correct, because I have often met with them in presence of polyuria, with a normal standard or urea excretion, without any symptom pointing to urinary toxæmia, and always in nephritis associated with cardiac hypertrophy and arterio-sclerosis.

For that matter these attacks of so-called uræmic dyspnoea are in no sense specific. We meet with much the same thing in cardiac affections, especially aortic (insufficiency and stenosis), and in aortic atheroma without any vascular lesion. It is then called cardiac or aortic asthma. Similar attacks are met with in elderly subjects apart from any sign of aortitis. A man who is over 40, and especially over 50, previously in excellent health, may be suddenly seized with asthma without any warning; this may pass off in a few hours, leaving him apparently in good health. Now it is never essential asthma that sets in at this age; it is invariably a symptom of fatal significance. If there be no nephritis nor hypertrophy of the heart there may be atheroma, as shown by an aortic murmur and a heightened blood-pressure. Even in the absence of these symptoms there may be a patch of latest atheroma in the aorta or in the coronary arteries. It is not the amount nor the extent of the atheroma that determines the attack of asthma; it is its localization in the arch of the aorta or in the coronary arteries, involving, it may be, filaments of the respiratory nerves.

The irritation of these filaments transmitted to the respiratory centre may be propagated to the extrinsic inspiratory muscles or the bronchial muscles, and by throwing them into a state of spasm usher in the asthmatic attack, and it may radiate into the pulmonary sympathetic, leading to vaso-motor dilatation and bronchial hypersecretion associated with asthma. Aortic or coronarial asthma is to the lung what angina pectoris is to the heart. When the irritation radiates from the aorta or coronaries, and, instead of involving the respiratory innervation, attacks cardiac innervation, we get angina pectoris and, for that matter, the two may co-exist side by side.

However this may be, an attack of asthma in elderly subjects, with or without albuminuria, with or without interstitial nephritis, is always the same. It recurs after a variable lapse of time, and the patient may succumb in the course of the attack, or he may die suddenly before the attack has had time to develop. The attack of so-called uræmic asthma presents all the symptoms, and runs the course of aortic or coronarial asthma.

It is conceivable that other vessels given off by the aorta and innervated by the pneumogastric, when affected with atheroma or endarteritis, may give rise to radiations in the direction of the bulbar respiratory centre, and so create the pathogenic reflex of asthma.

With asthma I generally associate the so-called renal acute cedema of the lung. This cedema also occurs in attacks: sudden onset accompanied by anxious oppression, but forthwith associated with a paroxysmal cough and copious sero-albuminous expectoration, as much as three or four pints in the course of a few hours, accompanied by lots of fine, subcrepitant, mucous, sibilant rales. Death may rapidly close the scene from asphyxia due to flooding of the bronchi by the exudation. Or in from half an hour to several hours the expectoration ceases, the dyspnoea subsides, and the attack undergoes complete resolution. Sometimes, however, the dyspnoea continues on and off for several days as the result of the bronchial "inundation." When the symptoms have subsided a variable interval of quiescence separates it from the next attack.

Just as with asthma, acute cedema does not supervene in cases of parenchymatous nephritis, in which we get anasarca, but as a consequence of interstitial nephritis, when there may be no cedema elsewhere, but where there is polyuria. It is also met with in association with aortitis and coronaritis, without nephritis or cardiac hypertrophy. Its mechanism appears to me to be that of aortic asthma, of which it would merely be one variety, characterized by the predominance of the nervous reflex on vaso-motor and secretory innervation of the bronchi, whence bronchial hypersecretion and dyspnoea.

Is Cheyne-Stokes breathing a uræmic dyspnoea, as has been generally admitted in France since Cuffer's thesis in 1878? For my part I do not think it is the consequence of toxæmia. We meet with it, it is true, in nephritis, just as we do the so-called uræmic asthma, but, like the latter, only in interstitial nephritis, with cardiac hypertrophy and arterio-sclerosis. It may supervene when there is polyuria and a normal excretion of urea; it may even persist for weeks without any symptoms of urinary toxæmia. It is not peculiar to nephritis, it is met with in cardiac and aortic affections apart from nephritis, in cerebral hæmorrhage, in basilar meningitis, and in presence of tumors of the encephalon. It is determined by ischæmia of the bulbar respiratory centre, whether this be the result of compression by cerebral hæmorrhage or a tumor or meningitic exudations, or as the result of bulbar enteritis giving rise to thrombosis or embolism of the vessels. In all these conditions the ischæmia diminishes the excitability of the respiratory centre, and as the physiological stimulus is carbonic acid it requires a larger proportion in the blood to set it going, whence respiratory pause until a sufficient quantity has accumulated in the blood, and this, acting on the bulbar centre, excites the play of the respiratory muscles. It is, in truth, an intermittent "limp" of this centre. When, therefore, this phenomenon occurs in interstitial nephritis, it is due to concomitant arterio-sclerosis and ischæmia of the respiratory centre, and it is in no sense a manifestation of uræmia.

To sum up, in parenchymatous nephritis we get dyspnoea as the result of generalized cedema, with hydrothorax or acute pulmonary cedema, or when there is hydræmia and chloruræmia; in interstitial nephritis we meet with interference with respiration consequent upon cardiac hypertrophy, dyspnoea from asystole due to this hypertrophy, attacks of aortic or coronarial asthma, or with or without acute pulmonary cedema, and dyspnoea in the Cheyne-Stokes form. These are the various kinds of dyspnoea and their mechanisms met with in Bright's disease.

I am quite aware that uræmia may be superadded to those different mechanisms, but if the presence of these mechanisms does not exclude the possible concomitance of uræmia, the integrity of the lung and the normal working of the heart at the time of the onset of the dyspnoea on the other hand does not *per se* justify the diagnosis of uræmic dyspnoea. For this question to be raised there must be a reduction in the proportion of urea and a diminished secretion of urine with asotæmia—*Medical Press*.

Amœba.

C. M. WENYON and F. W. O'CONNOR deal with problems affecting intestinal protozoal infections. Some of the conclusions arrived at by these observers are of great interest from clinical as well as laboratory standpoints. As a result of observations on a long series of cases, the authors lay down the following rules as a guide to the diagnosis of amœbæ in the stool:—

(a) If amœbæ containing red blood corpuscles are present in a stool, whether evidently dysenteric or not, they are *E. histolytica*, and mean that some active dysenteric process is going on.

(b) If the actual amœbic dysenteric process is so acute as to demand Emetin treatment, then amœbæ with included red cells will almost certainly be found in the stool.

(c) If amœbæ, none of which contain red blood corpuscles, are present in a dysenteric stool, then the case is either bacillary dysentery with an infection of *E. coli* or bacillary dysentery occurring in a carrier case of *E. histolytica*, in which there is no active amœbic dysenteric process in progress.

(d) In cases mentioned under (c) no anti-amœbic treatment is urgent, so that the case can be watched for a few days, during which encysted forms of *E. coli* or *E. histolytica* will appear.

(e) Amœbæ, none of which contain red blood corpuscles and which occur in non-dysenteric stools, may be either *E. coli* or *E. histolytica*. A diagnosis can only be made by examining the stools for a few days till cysts

It sometimes, though rarely, happens that amoebae cannot be found in the stool, even after several examinations, when actual ulceration of the large intestine is present. Amoebic abscess of the liver is not infrequent with no amoebae in the stool.

The presence of four-nuclear cyst is an indication of infection with *E. histolytica*, even when there has been no history of previous dysentery. The cysts from carriers who have never suffered from dysentery may give rise to acute amoebic dysentery in kittens.

The character of the stool in Bacillary dysentery, when seen at the height of infection is characteristic. Bacillary dysentery sets in with acute diarrhoea, which very soon washes all faecal matter from the gut, and it is after this, that there is found the glairy white or yellowish white mucous streaked or flaked with blood which is very little altered in colour. A portion of this mucous examined under microscope, shows a varying number of red blood corpuscles on a white field composed entirely of pus cells, a smaller number of large round mononuclear cells and a still smaller number of very large cells, looking like hypertrophied endothelial cells. Another feature of this cellular exudate is that some of the individual cells are healthy, others may show excessive necrosis. The cells show all kinds of degenerative changes and often show refractile spheres, and these have been mistaken for red cells and nuclei of amoebae. As the dysenteric condition passes off, the cellular elements diminish till finally the microscope fails to yield any information.

In amoebic dysentery when blood and mucous is present, it is much darker in appearance than the blood and mucous of bacillary dysentery. The blood and mucous are more intimately mixed with the faeces. Microscopic examination of the stools shows nothing characteristic apart from the amoebae.

The character of the unencysted *E. coli* is so indefinite as to render its identification, apart from cysts, most difficult. There is no evidence that *E. coli* is even pathogenic.

Of all the flagellates of the human intestine lamblia has the greatest claim to pathogenicity.

A note of warning is sounded by the authors for the benefit of those medical men to whom the subject of the intestinal protozoa of man is a new one. The great majority who examine for intestinal organisms do so only in the case of sick people, who have some intestinal disorder, and they have no means of comparing their findings with what occurs in healthy individuals. Accordingly it seems quite natural to them to attribute to the intestinal protozoon, both amoebae and flagellates, pathogenic powers which they may not possess.

Women and Methylated Spirits.

The drug habit is not the only vice that has sprung into prominence during this era of dear and diluted intoxicants. Methylated spirit drinking is on the increase; so much so that the Liverpool licensing justices have been moved to petition the Home Office to take measures to check the evil. Like drug dosing, the consumption of methylated spirit is far from being a new craving, but in the past, perhaps, its wretched victims have had to be sought, for the most part, among men. Women are now the great culprits. Mr. Harrison Jones, Chairman of the Bench, said women of the poorer classes, in order to satisfy their desire, visited oil paint shops to buy methylated spirits prepared for commercial use, assuring the shopkeepers that they wanted it for mixing with paint. As the spirit, which is seven times stronger than ordinary whisky, contains paraffin and other disagreeable mixtures to make it unpalatable, one would think the stomach of either man or woman would rebel against it. But it has the power to stupefy, and everything else is forgiven. Needless to say, its effect is terrible physically and morally; and insanity is the end. If anything, this is a more serious evil than the purchase of drugs, but the resources of the Home Secretary are wide and powerful.—*The Hospital*.

Epidemic Stupor in Children.

F. E. BATTEN, F. R. C. P., and GEORGE F. STILL, F. R. C. P.—During March and April, 1918, there have come under the writers' observation a series of children exhibiting an unusual condition of stupor. Three have been admitted to the Children's Hospital, Great Ormond Street, aged 11, 7 and 4 years, respectively, and one into King's College Hospital, aged 3½ months, in a condition of stupor which at first sight suggested tuberculous meningitis.

The stupor is said to have developed rapidly, without convulsions—in one case it was preceded by listlessness, a dreamy state, and inability to do work at school; in another case, although the boy had been ailing and had had headache for 2–3 months, yet the stupor dated from one week before admission to the hospital. The children were brought to hospital in a stuporose condition and lay on their backs with eyes closed, legs extended, arms sometimes flexed, sometimes extended.

There was general rigidity of the muscles, but the limbs could be moved passively in any direction and led to remain in whatever position they were placed—a cataleptic condition. A rhythmic tremor of the hands and forearms has also been observed. The rigidity has the character of "plastic tone," described by Sherrington, and the face has a peculiar mask-like appearance. Although apparently unconscious, the children could be roused,

would on command put out the tongue, open the eyes and follow a light or the finger, but without showing any sign of recognition of the object. When asked to open the eyes a flickering movement occurs before the eyes open. If the eyelids are raised passively the eyes may be seen to be divergent. Irregular nystagmoid movements occur, the eyes moving in all directions in an incoordinate manner.

The children do not speak, but emit a peculiar cry which may persist for hours. There is no retraction of the head or neck, but the neck and trunk show the same rigidity as the limbs. If the children are placed on their legs they will balance and will walk slowly forward if encouraged, but take no apparent notice of their surroundings. Urine and faeces are passed incontinently.

No sign of organic disease of the systemic or nervous system can be found. The temperature may be slightly raised for a few days at the onset, but after this is usually normal throughout. The pulse remains slow. The children may perspire profusely, especially about the head and upper extremities. The cerebro-spinal fluid on lumbar puncture flows out under normal pressure and shows no cytological or chemical change. The Wassermann reaction is negative.

The course has been towards recovery. After lying for 3-5 weeks in the stuporose condition the children slowly recover. The writers think that the condition may be similar to that described by Netter in Paris.—*The Medical Review*.

Acute Haemorrhagic Nephritis after Caterpillar

.. Urticaria.

F. SCHMITZ.—A medical man, who had never been seriously ill before, was stationed in Rumania where a certain hairy caterpillar is prevalent. It often causes urticaria by creeping over the skin. This happened to the patient. Dense wheals appeared over the whole of his body, with the exception of his face, hands and feet, and were excessively irritating. For 3 days there was no diminution of the urticaria, which was somewhat later accompanied by pain in the left brachial plexus, extending as far as the elbow, and greatly limiting the movements of the arm. On the 4th day the urticaria began to disappear, and by the 5th day the itching had ceased and the wheals had disappeared. But on this day he began to suffer from progressive malaise, and his temperature rose to 102.9°. His pulse became rapid and he suffered from severe headache and vomiting. In the evening he was dazed. A few hours later, after cold compresses had been applied and he had sweated profusely, full consciousness returned. Next morning the colour of the urine was dark and an analysis showed all the features of acute haemorrhagic

nephritis. It ran a favourable course, and after 4 weeks there was not a trace of albumin in the urine. Four weeks later its sediment contained no pathological elements.

SURGERY.

• Kondoleon's Operation for Elephantiasis.

W. E. SISTRUNK.—Kondoleon of Athens, in 1912, first reported cases of his operation for elephantiasis. Its aim is to establish, by a wide excision of the aponeurosis, a communication between the superficial and deep lymphatic channels. The deep aponeurosis seems to separate the superficial from the deep group of lymphatics. In elephantiasis the cedematous and hypertrophied tissues lie above the aponeurosis, while the subaponeurotic tissues are usually normal. When large pieces of this tissue are removed, sufficient communication may be established to allow the deeper lymphatics and the muscles to drain the stagnant lymph ordinarily drained by the blocked superficial group, and this markedly benefits the condition. The technique is as follows:—

Long incisions are made along the outer and inner aspects of the affected limb, and through each of these a large slice of cedematous fat is removed. The aponeurosis is then opened and a portion, 3 or 4 fingers wide, is excised throughout the entire length of the skin incision. The wound is then closed without drainage, so that the skin, with a small amount of subcutaneous fat attached to it, comes in contact with the exposed muscles.

The operation has been performed in the Mayo Clinic in 7 cases. In 3 the disease was located in the left arm, and in the other 4, in one lower limb.

In the first arm case elephantiasis had followed an infected vaccination wound, with repeated erysipelatos attacks. In the next case a simple lymphoedema of the arm followed the radical removal elsewhere of the left breast and axillary glands for a supposed malignant tumour of the breast, but which was afterwards proved to be benign. In the third arm case an elephantoid condition had resulted from an injury to the arm two years previously.

In one of the leg cases, in a woman, aged 23, the condition was probably congenital, having been first noticed at 1½ years. In another case, a child had chronic tuberculous synovitis of the knee and tuberculosis of the inguinal lymph nodes on the affected side.

The results in the arm cases were not so good as in the leg cases. In each case improvement was marked soon after the operation, but in two

instances the patients still report some swelling which varies in extent. In the vaccination case the arm and forearm have returned to normal, but a swelling of a fluctuating type persists on the dorsal surface of the hand.

In all the leg cases the improvement was striking and occurred almost immediately after operation. In the first, operation was performed 1½ years ago, the others 8 months, 4 months, and 2 months ago, respectively. All were heard from or seen during April or May, 1918, and in each the improvement has been marked, and has persisted.

TECHNIQUE.

In his first cases the writer followed as closely as possible the technique by Kondoleon. He gradually realized that better results were obtained when a fair amount of hypertrophied skin was removed in addition to an extensive removal of the cedematous fat, and that it was necessary, in order to obtain the best results, to remove as Kondoleon has emphasized, a wide strip of aponeurosis.

A long modified elliptic incision, which includes the skin to be sacrificed, is made on one side of the affected limb. On the other aspect of one of the lower extremities this incision would extend from the trochanter to the external malleolus. Then, in order to facilitate wide removal of the subcutaneous fat, the skin is reflected on each side of the incision for a distance of 1 to 1½ inches. The skin is retracted, and underneath each of the reflected skin edges, a long incision is made through the cedematous subcutaneous fat down to and including the aponeurosis. These incisions are made almost parallel to the original skin incision. Included between them is a quadrilateral piece of cedematous fat and aponeurosis. At the upper end these two incisions through the aponeurosis are connected by a transverse incision. The tissues to be removed are now free except for the attachment of the aponeurosis to the underlying muscles. By traction on the tissues that are to be removed it is easy to dissect the aponeurosis from the muscle throughout the length of the entire limb, and to remove in one long piece the skin, cedematous fat and aponeurosis. A number of vessels which tend to bleed profusely are encountered. These are temporarily controlled with forceps. After the tissue has been removed, these forceps are taken off, and surprisingly few of the vessels will be found to need ligatures. The wound is closed with interrupted silkworm gut sutures, without drainage. It is necessary to do a similar operation on the opposite side of the limb. If the patient's condition permits, this is done as soon as the first operation has been completed; if not, after 8 or 10 days. The tissues, although diseased, heal remarkably well, and in none of the cases in which the writer has operated has there been the slightest infection.

After operation, the patient is kept in bed for 8 or 10 days. An elastic bandage is then applied and the patient allowed to get up and walk about.

The bandage is used for several months, and if there is a tendency toward swelling when it is removed, it should be worn for an indefinite period. The suggestion of Matas, to administer anti-streptococcic serum or vaccine at intervals for some time after the operation, has been followed.

A woman, aged 21, with the congenital type of elephantiasis of the left leg, which had been present since the age of 1½ years, was first seen in the Mayo Clinic at the age of 15. There was great enlargement of the left foot, leg and thigh and a marked thickening of the skin. In August, 1911, according to Handley's method, one silk strand was placed on the outer and one on the inner aspect of the leg, from the ankle to the region of the left groin. The patient returned six months later without improvement; in fact, the enlargement had increased. In February, 1912, a double silk strand was placed subcutaneously on the outer and inner aspects of the leg, and the inner of these strands was extended upward into the fat of the abdominal wall, while the outer strands were carried as high as the left axillary line. The condition remained unchanged until her return more than 4 years later. A Kondoleon operation was then done, December, 1916, first on the outer side of the leg, and about one month later, on the inner side. Improvement was marked from the beginning, and at the time of her discharge, in March, 1917, the leg was much smaller. A letter received in May 1918, stated that the leg at present was smaller than when she left, and that she was able to walk and even to run with slight inconvenience.

A woman, aged 51, had edema of the left arm following amputation of the breast with removal of the axillary glands, done elsewhere. The wound had not been infected. Two months after the operation the arm began to swell, growing slowly but progressively worse and involving the dorsal surface of the hand, arm and the forearm nearly as high as the shoulder joint. There was no thickening of the skin. September, 1, 1917, a Kondoleon operation was done. Long incisions were made on the outer and inner aspects of the arm and forearm from a point a few inches below the shoulder joint down to the wrist; also two incisions were made on the posterior surface of the hand. The swelling in the hand decreased at once, and there was marked improvement in the arm and forearm for a time. A recent letter seemed to show that there is slightly more swelling than when she was discharged. This, however, varies from time to time.—*The Medical Review.*

Thyroid Treatment of Double Undescended Testes.

H. G. ARMSTRONG.—During the last 7 years, out of about 1,000 boys examined on entry at Wellington College, 7 were found with complete absence of both testicles from the scrotum. In each case the penis was very small, the scrotum a small piece of wrinkled skin, and there was no

appearance of hair upon the pubis. Four of them had Levi E. De Roth-child's sign of thyroid inadequacy, i.e., rarefaction of the outer third of the eyebrows. One boy was of Mongolian type. Three suffered from nocturnal enuresis.

To each of them thyroid extract in $\frac{1}{2}$ grain dose was administered twice a day over a considerable period. The effect was almost immediately apparent, and in 6 of the cases was completely successful. In the seventh the left testicle descended into the scrotum, but the right found a lodging in the perineum.

The writer has been able to continue his observation on some of these boys to the termination of adolescence, and has found that the testes and penis continued to make a normal growth, but in some the pubic hair was still very scanty. In the first instance the treatment was purely experimental, but it was so successful that it was adopted in similar cases, the results of surgical interference being so highly unsatisfactory.

The writer has not had the same success in the treatment of a single undescended testes, probably because in this condition the fault is anatomical, whereas the absence of both testes depends on some functional failure of the endocrinic glands.—*The Medical Review*.

Cutaneous Diphtheria of the Foot.

J. J. KEEGAN records the history of a patient admitted to the United States Naval Hospital, Chelsea, Mass., who presented, over the external malleolus of the right foot, a gangrenous ulcer from which cultures of diphtheritic bacilli were grown. The ulcerated surface showed a greyish-white membrane, and was surrounded by a raised hardened border. The sides and back of the leg as high as the knee revealed swelling, redness, tenderness and induration. Smears of bacilli, retaining Gram's stain. These bacilli had the stricture and coloration of *Bacillus diphtheriae* after staining with methylene blue or with Neisser's stain. In addition to these bacilli the smears showed numbers of cocci and diplococci, which proved on culture to be staphylococci and streptococci. On Loeffler's blood serum colonies of typical *Bacillus diphtheriae* were grown. The patient complained of huskiness and on examination of the throat showed some reddening of the tonsils and of the posterior pharyngeal wall. Diphtheritic bacilli were cultivated from swabs applied to the back of the throat. Seven days before admission a sore had formed on the foot from the pressure of a tight shoe. The sore had spread to form a bleb which was opened three days before admission, when thick pus escaped. The temperature was not raised, but the pulse was

slightly quickened. The ulcer was treated with a dressing of antitoxin and 9,000 units of diphtheritic antitoxin were given by intramuscular injection. The ulcer healed slowly, being reduced to one-half its size in twenty-one days, though the bacilli could no longer be found in the ulcer after the second day, and in the throat after the ninth day.—*The Medical Journal of Australia*.

Meckel's Diverticulum—Report of cases Causing Intestinal Obstruction.

BY

ROSCOE GRAHAM, M. D., *Toronto*.

Fitz says: "The pouch-like formation of intestine occasionally seen projecting from the lower part of the ileum is universally known as Meckel's diverticulum, not that this distinguished anatomist was its discoverer, for early in the eighteenth century, Ruysch presented an admirable illustration of this formation. Its frequent congenital nature was also recognized before the time of Meckel, and it seems probable that suggestions relative to its origin from the vitelline duct had been presented previous to the publication of this investigator in 1812."

In order to state clearly ways in which Meckel's diverticulum may cause intestinal obstruction, a short statement of its embryology will be helpful. This process is an unobliterated portion of the omphalomesenteric or vitelline duct. In Cullen's new work on the umbilicus will be found most excellent illustrations showing the various stages in the embryonic development which should normally result in a complete obliteration of this structure.

When the gastro-intestinal tract first shows signs of development from the yolk sac, the communication is very wide. However, as the development proceeds, the entrance of the sac into the body is considerably narrowed and then becomes definitely the vitelline or the omphalomesenteric duct. The reason for the narrowing of this communication is because of the increase in size of the embryo and the amnion without any appreciable enlargement of the yolk sac; thus the latter is shoved away from the former. The structures forming the body stalk, namely, the allantois, the umbilical arteries and veins, enter the body at the same site as the vitelline duct. The two, while not fused at an early date, represent the first stage of a true umbilical cord. As the amnion and foetus enlarge, these structures are lengthened and while outside the amniotic cavity they are separate, inside, they are held together by a sheath of amnion.

In an embryo five mm. long, the first piece of small intestine is differentiated, and from its convex border runs the vitelline duct. This commu-

nication, generally speaking, disappears when the embryo is between four and twelve mm. long. The vessels, however, persist long after this communication is cut off.

Despite the fact that this is what normally occurs, we may have various combinations of attachments and patencies of the duct. Eisendrath's classification is as follows: (1) Canal persists at both ends. (2) Canal persists at both ends, the centre forming a cystome. (3) Canal persistent at the umbilicus. (4) Canal persistent at the ileum. (5) Cord attached to umbilicus and ileum. (6) Cord with no lumen attached to umbilicus and ileum.

The commonest site is about twelve to twenty-four inches above the ileo-cæcal valve, but cases have been reported by Forester in 9 situations varying from the valve to four feet above it. The length may vary greatly, but has been placed at a minimum of ten inches. There may be a wide variation in the lumen from the size of the ileum to a lumen scarcely discernible. The specimens shown illustrate this very well, and in addition one has the unusual condition of hernial protrusions or cystic dilatation of the tip. It may or may not have a mesentery; in the latter case it derives its blood supply from the intestine.

The cases in this report show different types of diverticula, which cause obstruction.

Case 1. Where a patent diverticulum was attached only to the ileum.

Case 2. Where a patent diverticulum was attached to the ileum and to the mesentery of the ileum.

Case 3. Where a patent diverticulum was attached to the ileum and to an abdominal tumour.

Case 1. E. T., English, married, aged forty-five years, admitted to Toronto General Hospital complaining of pain in the right iliac region for eight days.

Ever since the first child was born sixteen years ago, patient has had more or less discomfort in the right iliac region. Eight days ago, was suddenly seized with abdominal pain which lasted for three days accompanied by vomiting; the pain moderated after this time and left just a dull soreness slightly tender on pressure. Patient has never had any other serious illnesses. Menstruation has been regular every twenty-eight days, lasting three or four days.

On admission. Fairly healthy looking female, well developed, teeth had well marked pyorrhœa, tongue heavily coated, breath very foul, temperature 102.2°, pulse 100. Abdomen fairly flat and lax, no visible peristalsis; on palpation a mass could be felt in the right iliac fossa

the size of an orange. There was very slight increase in the muscular rigidity on the right side with some tenderness on palpation. Vaginal examination confirmed the presence of a mass, but uterus and adnexa freely movable independent of the mass. There has been no gastric distress for six days. Urinalysis showed nothing abnormal, the white blood count was 24,000. A diagnosis of an appendiceal abscess was made and operation advised.

Operation. An incision was made over the mass, the intestines packed off and a large appendiceal abscess drained. The appendix had amputated itself about the middle, the two portions were removed and drainage established.

Progress. For the next three days the patient progressed favorably, the temperature varying between 99° and 99.4°, with the pulse around 100. There was some abdominal distension, which, however, was relieved by enemas. On the evening of the third day the distension increased and while it was possible to secure the passage of some flatus with enemas, it did not entirely relieve the condition. Later that evening the patient began to vomit and there was a slight increase in pulse rate. There was no definite tenderness except in the right iliac fossa; there was no extending abdominal rigidity that would suggest a spreading peritonitis; there was no increased elevation of temperature. The white blood count showed 12,000 leucocytes. The patient's condition became progressively more grave, but the abdominal distension never became extreme, no muscular rigidity developed, no increased elevation of temperature, no increased leucocytosis, enemas always resulting in the passage of a small amount of flatus. Operation was discussed, but as the most likely diagnosis was one of ileus paralyticus, it was considered inadvisable, particularly in view of the fact that enemas always resulted in the passage of small amounts of flatus. The pulse rate increased and the vomiting persisted, and in spite of our best efforts, the patient died a week after admission.

Post-mortem. On opening the abdomen the small intestines were found distended with no evidence of inflammation in the general peritoneal cavity. The original abscess cavity was nearly obliterated, containing about 30 c.c. of sero-saneous fluid. However, at a point eighteen inches from the ileo-cæcal valve there was a volvulus of the ileum produced by a Meckel's Diverticulum which had caused almost a complete obstruction.

Case 2. Miss J. R., admitted to Toronto General Hospital, October 9th, 1917, under Dr. F. N. G. Starr, complaining of pelvic pain.

For the last two years the patient had complained of severe pain in the back, and a feeling of weight in the lower abdomen. She had never had any other severe illnesses.

She was a poorly nourished female, very anæmic, weighing about one hundred and eighteen pounds, teeth showed slight pyorrhea.

Abdominal examination revealed nothing abnormal, vaginal examination revealed a cervical polyp and a marked retroversion. On October 10th, the patient was submitted to operation; the cervical polyp was removed, the uterus curetted, the retroversion was corrected and the appendix was removed.

The progress after the operation was uneventful for ten days, when a good deal of abdominal distension occurred. This was largely relieved by enemas. On the eleventh day the pulse rate increased and the patient was nauseated. Enemas still succeeded in expelling flatus but in successively smaller amounts. The distension became quite severe, the nausea increased and the pulse rate reached 120. On palpating the abdomen, tense coils of small bowel could be felt, but no muscular rigidity. A tentative diagnosis of small bowel obstruction was made, and operation advised.

Operation. On opening the abdomen, tense coils of bowels presented, the sigmoid and cæcum were both collapsed. On searching, coils of small bowel were found collapsed, and on tracing them along it was seen that they herniated under a Meckel's diverticulum which was attached to the convex border of the ileum and to the superior aspect of its mesentery. The mesenteric attachment of the diverticulum was freed and the obstruction was relieved. The diverticulum was then amputated at the ileal attachment and the stump invaginated as in dealing with appendix stump. The abdomen was filled with normal salt solution and closed in layers. The bowels moved that evening, expelling a great deal of flatus, but the pulse became worse and the patient succumbed twenty-four hours later.

Case 3. Mrs. A. W., aged thirty-five years, referred to Dr. F. N. G. Starr by Dr. E. J. Free, of Campbellford, was admitted to the Toronto General Hospital, November 31st, 1916, complaining of abdominal swelling.

For the past few months the patient had noticed an increase in the size of the abdomen accompanied by nausea and obstinate constipation. She had a variable appetite, was very anæmic and appeared very ill-nourished. She had her appendix removed two years ago and has a ventral hernia resulting. Menses regular and normal. She has had no other serious illnesses.

On abdominal palpation a large mass was felt arising from the left iliac fossa extending midway between the umbilicus and the ensiform; it was dull on percussion. A thrill was transmitted and it fluctuated. Per vaginam, a mass was felt filling the whole pelvis, but seemed to be more fixed on the left side. A diagnosis of ovarian cyst was made and operation advised.

Operation. On opening the abdomen, the omentum was adherent over the front of the tumour. When this was separated, the sigmoid was found

to be flattened out over the left lateral aspect. The cyst arose from between the layers of the left broad ligament, thus being really retroperitoneal. In the course of separating adhesions, one came to a mass of adherent intestines from which ran a diverticulum which was attached to the cyst wall. This was severed, and when the support of its connection with the cyst wall was lost, the bowel fell into such a position as to obstruct its lumen. The cyst was completely removed and weighed twenty-three and one-quarter pounds.

The condition of the bowel was investigated and it was considered safer to resect, as acute obstruction seemed inevitable. An end to end anastomosis made an uninterrupted recovery.

Case 4. Master F., aged fourteen years, was seen by his physician complaining of abdominal pain, on December 3rd, 1915, and admitted to Toronto General Hospital under Dr. F. N. G. Starr.

On two previous occasions he was suddenly seized with acute abdominal pain, and each time a tentative diagnosis was made of acute appendicitis, but on the physician returning in a few hours, he was surprised to find that the pain had entirely disappeared, and the patient very well.

During this attack, however, the pain persisted and on palpating the abdomen, tense coils of intestine could be felt in the middle of the lower abdomen. There was no muscular rigidity but slight nausea. In view of the history of previous attacks and their sudden cessation, a possible diagnosis of internal hernia was suggested, possibly by Meckel's diverticulum, despite the fact that the case clinically simulated acute appendicitis. The curious fact, however, is that during a long rough ride in an ambulance the patient was again suddenly and almost completely relieved of his symptoms. It was considered, however, advisable to operate.

Operation. On opening the abdomen, red and distended coils of small intestine were seen, and searching for a cause, one found a hernia under a Meckel's diverticulum, precisely as shown in Case 3, except that in this case only a small loop of bowel was herniated, the rest having reduced itself spontaneously.

SUMMARY.

1. In post-operative cases showing distension late in their convalescence, one should bear in mind the possibility of a Meckel's diverticulum being a causative factor, considering the fact that they occur in two per cent. of autopsies.
2. The palpation of tense coils of intestine as pointed out by Starr is an aid in localizing the obstruction.
3. The history of no previous illness and the history of no umbilical discharge is no criterion that the patient has no diverticulum remaining.

4. If a patient after operation has had an uneventful convalescence for three days, and then develops abdominal distension, acute ileus is scarcely to be considered and some other cause must then be looked for.

5. Intestinal obstruction caused by Meckel's diverticulum seems to come on more gradually and is more intermittent than most acute obstructions.—*C. M. Association Journal.*

Points on General Anæsthesia for the Surgeon.

BY

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The surgeon is very often obliged to operate under adverse conditions, having at times to work with unskilled assistants, and my remarks will be made in the hope of being of some help when a surgeon finds himself in such a position.

First, I think every surgeon should be able to say what anæsthetic should be given for certain cases, and the manner of administration, and to this end I will cite a few outstanding cases which require special care.

Case A.—A patient suffering from intestinal obstruction, with fecal vomiting:

We find the patient toxic, suffering from profound shock, the radial pulse being imperceptible. In this case nitrous-oxide is contra-indicated, on account of increasing the embarrassment of respiration, which has already been impeded by distension of the abdomen pressing on the diaphragm.

Ethyl-chloride is contra-indicated because of the depressing effect on circulation, where there is already toxæmia and poor circulation, and chloroform would add more fuel to the fire, so we have only ether to resort to, which I consider the safest anæsthetic. This should be administered very carefully, and slowly on an open mask, and when the patient has reached the second stage of anæsthesia, the stomach tube should be inserted in order to allow the contents of the stomach to pass out. The stomach should be washed, and the tube left *in situ*. If, during this procedure, a towel is placed over the mouth and nose, surrounding the tube, a little ether may be dropped on the towel to prevent the patient from returning to consciousness. At this juncture the operation may be proceeded with, and if there is any regurgitation into the stomach from the intestine, it will have exit through the stomach tube. If any of the contents of the stomach are already in the larynx, with a pair of forceps, insert soft gauze into the throat, to absorb what is there, and this treatment should be persisted in until all fluid is eliminated. At the same time, only enough of the anæsthetic should be administered to keep the patient quiet, as this type of patient is already partially anæsthetised by the toxins and shock.

Case B.—Patient suffering from loss of blood:

In this case chloroform is contra-indicated on account of its depressing effect on circulation, where vitality is already very low.

Ethyl-chloride is contra-indicated for the same reason, being next to chloroform in its toxicity.

We have left ether and nitrous-oxide and oxygen to choose from, and of these two ether acts as a stimulant, but is more toxic than the nitrous-oxide and oxygen. In such cases as this, there is little embarrassment in respiration (unless there is hæmorrhage into the abdominal cavity), when ether would be indicated. Otherwise nitrous-oxide and oxygen would be the safest anæsthetic, but asphyxia must be avoided.

Case C.—Patient suffering from pulmonary disease, either chronic or acute:

In these cases, one must be in a position to change the anæsthetic and the mode of administration at any moment. Respiration is already embarrassed and nitrous-oxide, ethyl-chloride, or ether may increase this condition. Chloroform is the least irritating anæsthetic, but as circulation is usually very much interfered with, and the heart muscle affected, it must be administered with extreme caution. Probably better results would be obtained by adding a little ether to the chloroform, or a mixture of chloroform and ether, change to ether, as the irritation will be allayed and ether will overcome any depression caused by the chloroform. But if ether should produce irritation, nitrous-oxide and oxygen may be resorted to, or if this is not available, return to the chloroform and ether mixture, in order to complete the operation. It requires judgment in all these cases to know just when to change from one anæsthetic to another.

Case D.—Brain surgery:

In cases of brain surgery patients usually take any anæsthetic fairly well. But it is essential that a patient should be anæsthetised without having any congestion, and the choice of an anæsthetic will depend very much on the type of patient.

If the patient is plethoric, or has hardening of the vessels, it is better to begin the anæsthetic with ether chloroform or chloroform and ether mixture, and when the patient is past the stage of irritation change to ether on the mask.

If, on the other hand, the patient is delicate and slight, anæsthesia may be induced with nitrous-oxide and oxygen and sustained with ether throughout.

Some surgeons prefer chloroform exclusively, in brain surgery, for the reason that the blood-pressure is lowered by it, and, consequently, they thin

less hæmorrhage is produced. This contention appears to me a fallacy, as the action of chloroform produces such profound depression on the circulatory system, and affects the unstriated muscle in the walls of the vessels, so that there is not the same recoil, when a vessel is cut, and hence hæmorrhage is more profuse. My opinion, gained from personal experience, is that it is not so much the drug that is used that increases the amount of hæmorrhage as it is the manner in which the drug is administered.

A striking example of the difference in the effects of the two drugs, ether and chloroform, is to be found in the practice of obstetrics. A patient is much less prone to post-partum hæmorrhage where ether is given than where chloroform is administered.

DANGER SIGNALS.

The surgeon should be able to recognize signs of danger that may be developing, and be able to direct what should be done to obviate disaster.

For instance, with regard to breathing, if the respiration becomes faster and more shallow, or faster and deeper, under anæsthesia, there is some reason for this, and the anæsthetic should be discontinued, until it has been ascertained as to whether this is due to too deep or to too light anæsthesia. If respiration is stertorous, it is an indication that the patient is not getting sufficient air. If inspiration becomes short and expiration prolonged, it is a very grave sign, as the patient is either too deeply under or is suffering from shock due to the operation, or both.

If the breathing becomes very quiet and shallow, although it may be regular, the patient is either too deeply or too lightly under. The anæsthetic must be discontinued until the two stages are differentiated.

Sometimes the respiration will resemble Cheyne-Stokes. This is always serious.

Noisy breathing, associated with cyanosis, shows that there is some obstruction of the air-way.

Laryngeal spasm may be caused by obstruction of some kind, or an irritable throat, or it may be due to too rapid administration of the drug, or it may be some impurity in the drug.

As to circulation, if the color changes from normal to purple, and from that to pallor, the pulse will soon change for the worse. If pallor alone is present, the circulation has become depressed, either from too much of the anæsthetic or from shock of the operation, or both. Pallor sometimes will occur, when a patient is too lightly under, owing to the vomiting reflex beginning to manifest itself.

If the ears or the lips become pale, it is always a sign that circulation is failing. With these changes in color, there is always a corresponding change in the pulse.

If the pulse becomes quick and small, or irregular, this indicates that circulation is being seriously affected. One cannot dissociate the color and the pulse. The former is the indicator of the latter.

With these changes in respiration and circulation, the pupil will also vary. Oftentimes the first indication that anything is wrong will be shown in the pupillary reflex. If the pupil dilates widely, and the color becomes pale or livid, and the pulse changes for the worse, the patient is in a serious condition.

Sometimes the pupil will dilate widely, although the color and the pulse may be good. This may be due to a reflex from the manipulations of the surgeon, the patient being too lightly anæsthetised.

In closing, I would like to say a word regarding the manipulation of the surgeon. Some surgeons appreciate more than others the importance of the bad effect produced on the patient by trauma. A patient may be more profoundly shocked, and have a much more trying convalescence, from an operation lasting only half an hour, where the intestines, or other organs of the body have been roughly handled, than the same patient would have, should the operation last an hour or more, and the surgeon exercise gentleness throughout.

I might add that I am glad that some of the surgeons know enough about the art of anæsthesia to appreciate the difficulties that the anæsthetist so often encounters, and I hope the time will soon come when all surgeons will have so intelligent a knowledge of this subject that when the surgeons themselves are embarrassed in their own work, in cases where the patient is not doing well under the anæsthetic, that they will not, in turn, embarrass the anæsthetist but rather assist him, for it may be that this will mean the turning-point in the saving of the patient's life.—*Canadian Practitioner & Review*.

THERAPEUTICS.

The Successful Treatment of Sweating and Ill-Smelling Feet.

In an editorial, the Editor of the *Critic and Guide* for October 1918 remarks that sweating and smelly feet or ill-smelling feet constitutes a very annoying affection. He further says: "You have heard stories about divorces which have been brought about as a direct result of this occasionally extremely offensive condition. Personally I know of no cases of divorce from this cause, but that bromidrosis of the feet acts in many, very many, cases as an insuperable inhibition to the sexual act, to this I can testify from my personal

practice. And yet there is absolutely no excuse for permitting this condition to exist, for I know of no case of perspiring and ill-smelling feet, no matter how bad, that cannot be completely and permanently cured within a few days. I am not in the habit of making strong dogmatic statements in the domain of therapeutics, except when I am sure from personal experience in a large number of cases that I know what I am saying.

The basis of the treatment is potassium permanganate. Buy two or three ounces of it, dissolve one-half teaspoonful in a basin of water. Dip the feet in the solution for 5 to 8 minutes, dry them and go to bed. In the morning rub the feet with a powder, having the following composition:—

Salicylic Acid	... 3 grms.
Alum	... 5 grms.
Starch	... 10 grms.
Talcum	... 82 grms.

Also sprinkle some of the powder into the stockings. New stockings or socks must be put on every morning and the bathing of the feet must be continued for 5 or 6 nights. This, as a rule, brings about a cure. I prefer potassium permanganate to any other drug for this purpose. Formaldehyde will cure this condition just as effectively and in some cases even more quickly than potassium permanganate, but it has the disadvantage of hardening and cracking the skin. In bad cases, where the skin between the toes is raw, as often happens, little pledgets of cotton saturated with spirits of camphor have to be put in between the toes. This heals the skin in 2—3 days. It is advisable to continue the use of the powder until the tendency to hyperidrosis and bromidrosis seems to be permanently cured.—*The Practical Medicine.*

Business Notices.

The Editor's Office is at RAMABHAVAN, Poonamallee High Road, MADRAS.

The Manager's Office is at 323, Thambu Chetty St. Georgetown, Madras.

All literary communications and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7—8 or 10 s.,
Half page Rs. 4—8 or 6 s., a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

THE ANTISEPTIC

FEBRUARY, 1919.

The Two Important Grievances of Sub-Assistant Surgeons.



We are glad to note that the amelioration of the condition of Sub-Assistant Surgeons is no more the merely academic question which it used to be some years ago but is engaging the earnest consideration of the authorities. It is a matter of common knowledge that the Sub-Assistant Surgeons are a very useful class of medical men scattered over the country and carrying relief to the remotest nooks and corners. They number something like 3,000 and odd and constitute as it were the backbone of the Medical department in India, the guardians of the public health, at any rate of the health of the masses, who form the large majority of the population. There are, of course, the more costly agencies, such as the Cadre of Assistant Surgeons and the I.M.S. Officers, but these can be counted by the hundreds, and being generally stationed at the District head-quarters and important towns and cities, their services are confined to the high-placed and wealthy few. Has cholera broken out? Yes; the next day you find the humble Sub-Assistant Surgeon dropping in in the affected village with his chest of medicines and disinfectants and willingly risking himself engaging in the treatment of the disease regardless of his personal comforts, convenience and even life. Has plague broken out? Yes; here again you find the jaded Sub-Assistant Surgeon rushing to the thick of the perilous area and carrying out measures of relief. Equity demands that such a useful class of public servants should be adequately remunerated, encouraged and treated with consideration and due courtesy. But these ill-fated and voiceless thousands have bundles of grievances which, in time and out of time, in place and out of place, have been urged for the consideration of the authorities.

The first and most legitimate grievance is the insufficiency of pay. The antediluvian scale of pay, drawn up probably half a century ago, is an anachronism and nothing short of a "starvation scale" at the present time and still worse since the outbreak of the world war.

When we seriously consider how the prices of food stuffs and other necessities of life have tripled and quadrupled and the fairly elaborate and costly course of studies which our men of the present generation have undergone and do undergo, we cannot but be moved by the piteous picture which these men present. We quite appreciate the recent enhancement of the scale of pay and can anticipate that in any attempt to press a further increase we will be confronted by the recent boon, but we still feel that the boon is meagre and cannot solve the problem of keeping the body and soul together in these hard times. It may be argued that the prices of the necessities of life, are not likely to continue so high, but will fall sooner later after the termination of the war. But our experience of these prices during the past 20 years can hardly permit of anything like an optimistic view of the matter.

It is therefore obvious that nothing less than three times the old rate of pay can possibly keep the Sub-Asst. Surgeon above want: we would like to see that the scale of pay is raised to 100—10—300.

The second grievance is that he has no scope for promotion to higher ranks—a disability which exists in no other department of Government service. A Revenue Probationer who starts service as a Revenue Inspector on Rs. 35 has scope for rising up to the grade of Deputy Collector; a Sub-Inspector of Police who starts service as such, on a pay of Rs. 50 per month, has scope for rising to the grade of Deputy Superintendent; a Sub-Inspector of Salt and Abkari has chances of rising to the rank of Inspector on Rs. 400; but the unfortunate Sub-Assistant Surgeon has nothing more to look forward to; he starts career as such and ends his career as such, in spite of the fairly high standard of his general education and the four years of study in the Medical School and the prospect of his course being extended to 5 years. The Civil Assistant Surgeon with more or less the same course of study, though for a year more and in a Medical College, has chances of becoming a Civil Surgeon and officiating as District Medical and Sanitary Officer. The course of study in both cases being almost the same, the disparity in pay and prospects is incomprehensible. A few years ago the Government was pleased to order that deserving Sub-Asst. Surgeons might be promoted to the rank of Asst. Surgeon, and though in Burma and other provinces an appreciable number of them have accordingly been promoted, in Madras only 2 or 3 have so far been profited by the concession. Yet it is Madras Sub-Assistant Surgeons that have made a name for efficiency. We would therefore commend their case to the Local Government and suggest that not less than 25% of the vacancies in the Cadre of Civil Asst. Surgeons should be reserved for deserving Sub-Asst. Surgeons.

THE ANTISEPTIC.

Vol. XVI.]

MARCH 1919.

No. 3.
Annual Subscription Rs 5.

Original Articles.

NOTES ON INFANTILE CONVULSIONS.

BY

A. C. K. HEBBAB, L. M. P., MADRAS.



DEFINITION :—Sudden and violent involuntary muscular contractions in an infant.

Causes and classification :—

A. Preceded by some illness.

I. Hyperæmia of the brain and spinal cord caused by high fever, due to any cause, particularly during acute specific fevers, infantile paralysis, etc.

II. Anæmia of the brain—caused by exhausting illness, severe diarrhoea, anæmia, etc.

III. Disease of the brain :—Tumour, meningitis, hemiplegia, etc.

B. Not preceded by any illness :—

(1) Improper diet.

(2) Intestinal worms.

(3) Teething.

(4) Fright.

(5) Mental suffering or shock on the part of the nursing mother.

(6) Epilepsy in parents.

Signs and Symptoms :—

The phenomenon of an attack is quite familiar to every one. Sometimes it is preceded by warnings such as *restlessness*, *localised movements* such as convulsive twitchings of the mouth or face, *localised spasms*—inward bending of the thumbs upon the palms of the hands, a somewhat similar condition of the toes (*carpo-pedal spasms*), *laryngismus stridulus*, squinting, etc; but sometimes it comes all on a sudden without any warning.

* Specially contributed to *The Antiseptic*

When a fit occurs the child becomes very pale, the eyes stare and are rolled about, features distorted, the breathing is irregular and catching, the hands are clenched and the whole body becomes stiff—the whole thing lasts $\frac{1}{2}$ to 5 minutes or sometimes even longer. The more violent the fit, the shorter is its duration and *vice versa*. When the fit is over, the child resumes the healthy appearance followed by sweating and perhaps a sound sleep.

Diagnosis :—

Convulsion in children is not a disease in itself ; it is only a symptom of some disease or other. So our attempts at diagnosis should be directed to the causes by prompt and careful examination and inquiry into the history of the case :—

High temperature and any acute disease explaining its cause (of course malaria included).

The following are the order of things in inflammatory affections of the brain and are worth remembering in this connection :—

Head symptoms such as disturbed sleep, grinding of the teeth at night, vomiting, irregular bowels, irritability, restlessness, hot head, startling from sleep in terror, and pain in the head and general feverishness (which are the premonitory symptoms) lasting for a few days and followed by persistent vomiting, stupor, twitchings, squinting, irregular pupils, alternate flushings and pallor, rigidity of muscles, shrieking and excitement from which the patient soon again passes into drowsiness followed by delirium and convulsions. The fontanelle or opening of the head will be felt throbbing and bulging. All these take place in inflammatory affections of the brain as already noted ; similar symptoms with convulsions are almost likely to occur in quite a different class of cases and requiring quite a different form of treatment, e.g., in a case of great exhaustion of the vital powers, the result of chronic diarrhoea or dysentery or some such cause. But here the temperature is low, fontanelle depressed, bowels loose, absence of previous head symptoms, etc., will help us to diagnose this class of cases.

Unilateral fits suggest intracranial disease ; convulsions beginning immediately after birth indicate meningeal hæmorrhage. Proper clinical examination and history may elicit any one of the following :—

Whooping cough, which produces mechanical congestion of the brain.

An indigestible meal.

Intestinal worms, etc.

The last two may also give an elevated temperature.

Prognosis :—

A child seldom dies in a fit but there is a possibility of this danger when spasmodic closure of the air passages takes place. Further if the fits are

frequent and severe, death may take place from exhaustion. In a few cases, epilepsy will supervene later on—perhaps in the offsprings of the epileptics and drunkards.

Treatment :—

ASCERTAIN THE CAUSE.

I. (1) If the temperature is high, reduce the same by placing the child in cold water up to its neck and pour cold water over its head for ten minutes. The effects of the bath will be constant, the face will brighten up after a few minutes, nervous twitchings subside, probably there will be a motion and the child will regain complete consciousness. After ten minutes the child should be removed from the water, placed lying upon a sheet, gently dried, covered up and laid upon a bed when it will sleep soundly.

If the fit returns, repeat the bath, slightly increasing the duration of the same.

If the child shows signs of collapse after or during the bath, a little brandy may be administered.

If the pulse is exceedingly feeble, this bath should not be resorted to.

If the bath cannot be given to reduce the temperature for any reason, recourse must be had to any of the following methods of reducing the temperature :—

(2) Sponging the surface of the body with water or vinegar and water (1 to 3) will be of some use in making the child quiet and comfortable.

(3) Wet-pack :—A large towel, wrung out of lukewarm water is to be wrapped round the patient, and this is to be covered with a blanket in which the patient is to be rolled and tucked in. First there will be a little chilliness, but reaction soon sets in, the pack should be removed after about ten minutes and the patient is to be rubbed dry and removed to bed.

(4) Cold to the head :—Application of cold to the head will be of some value and may be used in conjunction with others. It allays nervous irritability and removes head symptoms in hyperpyrexia. It does not cool the body much. A single piece of wetted muslin which will permit of free evaporation should be applied over the head. The cloth may be wetted with some evaporating lotion or pure breast milk or, better still, an India-rubber ice-cap filled with broken ice, can be applied. The ice-bag should be moved about the scalp gently ; and thus it may be applied for five minutes or so when it should be removed for an interval before repeating.

(5) Drugs. Drugs should rarely be used to reduce the hyperpyrexia ; when used, a small dose of Aspirin may be given to reduce the temperature. After the hyperpyrexia is brought down, and when the child is able to

swallow, a mixture containing Bromides, Diaphoretics and a good Purgative should be administered and appropriate treatment given later on for the original disease.

Unless there is a history of previous diarrhoea, it is always advisable to give a small Glycerine Enema at the outset when the child is not able to swallow. If no syringe or glycerine is available, glycerine suppository may be applied. If that also is not available, a small piece of ordinary soap cut in the shape of a cone may be gently introduced into the rectum and will be promptly followed by the emptying of the lower bowel which will be of much use in controlling the fever and convulsions.

II. In convulsions due to exhaustion, the treatment should, as far as possible, be preventive, *e. g.*, in a case of diarrhoea by stopping the motion, allaying nervous irritability by sedatives like Bromides and sustaining the vital powers by nourishments and stimulants such as egg-flip by mouth and injection of Saline solution per rectum or better still intravenously.

When a fit occurs from this cause it should not be lightly thought of; the child should be put into a mustard hot bath gently in a reclining posture keeping the head low. If the little patient is able to swallow, a little brandy and ammonia mixed with a little water may be given while in the bath or just after.

After removal from the bath the child should be gently dried, rolled in a blanket and kept warm. Liberal and sustaining nourishments with sedatives like the Bromides in small doses, should be given as soon as the power of swallowing returns.

III. In convulsions due to actual Brain affections the child should be put into a warm bath and cold should be applied to the head; bowels should be opened by Glycerine Enema and a couple of grains of Calomel should be placed upon the back of the tongue. As soon as the power of swallowing is returned, the child should be put on a mixture of Chloral and Bromides till all tendency to fits disappears.

IV. For a simple convulsion the child should be put into a warm bath and while there, cold water should be sponed over the head. Bowels should be cleared at once in the manner already stated, *i. e.*, a couple of grains of Calomel by the mouth and a Glycerine Enema,

When the child is able to swallow, an emetic should be given if any indigestible meal is suspected to be the cause and followed invariably by a purgative with Santonin if worms are suspected. The child is now to be put upon a mixture containing Bromides, and if the temperature is elevated, with some simple diaphoretics also.

The gums should be examined and if found swollen by a pressing tooth, should be lanced.

General directions:—

1. During fits and unconsciousness great care should be taken to see that the mouth is free from all obstruction.
2. The tongue should be drawn forward if it has fallen to the back of the mouth.
3. Perfect quiet must be observed. No crying or weeping should be allowed.
4. The room where the patient is kept should be cool, well-ventilated and not exposed to glare.
5. No attempts should be made to play with the child for some time after he has recovered his senses.
6. Bromides, and if necessary Chloral, should be administered in every case until all cerebral excitement has passed away and sound sleep is produced.
7. Except in No. II class of cases (caused by exhaustion, the result of diarrhoea, etc.) cold should invariably be applied to the head and the bowels should be opened as soon as possible first by an enema and then by purgative.
8. The cause must be more carefully inquired into and attempts should be made to remove or treat the same during the interval.

TREATMENT OF MAL-POSITIONS AND MAL-PRESENTATIONS.

BY

ROBERT JARDINE.

Occipito-Posterior Cases.

Forceps delivery is often called for on account of delay. If the occiput has rotated forwards there will be no difficulty, but if it has not, the case may prove extremely difficult, if the blades are applied without first changing the position into an anterior one. In some cases the occiput will rotate forwards during the traction, when the blades should be taken off to be re-applied to the sides of the head, but it is not safe to trust to this occurring. The grip is bad, and it often ends in the blades slipping. Before applying them the position should be changed into an anterior one. The head is grasped by the hand in the vagina, and the occiput is turned forwards; but this alone is of no use, as it will at once swing back, unless the position of the body of the child is also altered by carrying the front shoulder across the abdomen to the opposite side. This can be done with the external hand;

or by passing the fingers of the internal hand beyond the side of the head and levering the shoulder across. In some cases the delivery may now be left to nature, but it is preferable to deliver at once with forceps.

Cæsarean section has been advised, but is not justified, unless the head is too big to pass the brim with the occiput to the front.

Face Presentations.

The head is extended, and the chin is the leading part. The face descends in one or other of the oblique diameters of the pelvis with increase of extension, and the chin comes forwards under the pubic arch by internal rotation. The head is then freed by a bending round under the pubic arch, which means flexion. Mento-posterior cases act in the same way as occipito-posterior ones. If there is marked extension, and the chin is well in advance, it will come forwards; but if the extension is not sufficient to bring the chin in advance, the forehead will come forwards and the chin will pass into the hollow of the sacrum. Unless the child is very small there will be complete obstruction.

Treatment.—If the chin is to the front the case may be left to nature, and if there is too much delay assistance can be given by forceps. In mento-posterior cases, it is better to interfere as soon as the os is fully dilated. Flex the head by passing a hand into the vagina with the fingers over the occiput and the thumb on the forehead to bring the occiput down while pushing the forehead up. The presentation will thus be changed into vertex with the occiput anterior. Forceps can then be applied, and the delivery should be easy. Flexing the head is very easy in secondary face cases, where the extension is due to the hitching of the occiput; but in primary cases, where the extension is due to a tumour in the neck, or a spastic condition of the muscles of the back of the neck, it will fail. Fortunately such cases are rare. The best treatment for them is version.

In mento-anterior cases flexion of the head is also applicable, but the case will be changed into an occipito-posterior one, and the delivery may be as difficult, unless at the same time the occiput is brought to the front in the way already described.

When the chin has gone into the hollow of the sacrum it may be possible to push the head up and flex it, but if this cannot be done craniotomy will probably be necessary unless the child is very small, when it may be delivered with forceps. The blocking is due to the chest of the child and the bulk of the extended head having to pass through the pelvis at the same time, which can happen only with a very small child.

Brow presentations should be dealt with in the same way as face, by flexion of the head and forceps, or by version. In an anterior brow position

you may increase the extension and change it into an anterior face position and then deliver with forceps, but flexion is preferable, or failing that, version.

Delivery in Flat Pelvis.

In a flat pelvis the head presents in the transverse diameter with one or other parietal bones leading. In the majority of cases the anterior parietal bone leads, the sagittal suture crossing the pelvis behind the centre near the promontory. When the posterior parietal bone presents, the sagittal suture crosses the pelvis in front of the centre near the back of the symphysis pubis. The anterior parietal presentation is much more favourable than the posterior, especially when forceps delivery is necessary.

In the anterior parietal presentation there is first a dipping of the forehead, and then the head slips towards its occipital end, thus substituting the much smaller bitemporal diameter for the biparietal in the conjugate diameter of the pelvis. The anterior side of the head is now driven down behind the pubes, and the sagittal suture passes upwards towards the promontory. This might be called lateral flexion of the head. When it has thus flexed as far as it can, the side of the head pivots on the back of the pubis, and the posterior side of the head is driven down in front of the promontory. The sagittal suture has come forward to the centre of the pelvis, and the posterior side of the head has rounded the promontory and the head is through the brim. As the outlet is enlarged, there will not be any further difficulty. A certain amount of flexion will occur, and the occiput rotates forwards under the pubic arch.

With a posterior position there is the dipping of the forehead and the slipping towards the occipital end, then the posterior side of the head is driven down by the promontory, the sagittal suture passing up behind the symphysis pubis. The posterior side of the head pivots on the promontory, and the front side is driven down behind the pubic arch, the sagittal suture passing back towards the centre of the pelvis. The whole of the front side of the head is resisted by the back of the pubis, and this rounding of the back of the pubis is much more difficult than the rounding of the promontory in the anterior parietal position, because, in the latter, the only part which is resisted is the small portion against which the promontory impinges. Of course, if the conjugate diameter is too small, the resistance of the promontory will prevent the descent; but we are not considering such cases, but those in which there is sufficient room for the head to pass by natural efforts, or with the assistance of forceps. In many cases the promontory causes an indentation of the skull.

Treatment.—In an anterior parietal presentation the best method when natural efforts fail, is to use forceps. The blades are applied in the usual way, one on either side of the pelvis in the antero-posterior diameter of the

head, and as traction is made the mechanism of labour is carried out, the head swinging round its pivot on the back of the pubis. When the head is brought down to the outlet the blades should be removed, and pressure upon the fundus will often finish the delivery, but if not, the blades can be re-applied to the sides of the head. During traction the patient should be in the hanging-leg position until the head has passed the brim, as this increases the true conjugate about $\frac{1}{2}$ in. When the head has passed the brim, the lithotomy position should be resumed.

In a posterior parietal position forceps delivery is contraindicated, unless the position can be changed into an anterior one. If the head is not much moulded, this can be done by grasping it and bringing the anterior side down while pushing the posterior one up, until the sagittal suture is close to the promontory. If the blades are applied when the posterior side of the head is down, traction will not carry out the mechanism of labour, as to do so the head must be swung back on its pivot on the promontory to bring the anterior side of the head down. You cannot do this with forceps. You may drag the head down by brute force, but the chances of delivering a live child will be very small.

If you cannot change a posterior parietal position into an anterior one, version is the treatment, provided there is no risk of rupturing the uterus. Prior to the introduction of the axis-traction forceps, version was the treatment in flat pelvis, but in anterior-parietal positions of the head axis-traction forceps delivery gives the best chance for the child, but in posterior positions version is to be preferred. If the forceps fail in either of the positions, it is a common but bad practice to fall back upon version. The chances of saving the child are small, and of rupturing the uterus great. When forceps have failed craniotomy is the safest for the mother.

Transverse Presentations.

If found before labour, the presentation should be altered by external manipulation, so as to bring the head into the brim of the pelvis. To prevent it again becoming transverse, pads should be applied, and a firm binder to keep the child longitudinal. If labour has begun and the membranes are unruptured, it may be possible to do the same; but if not, the membranes should be kept intact as long as possible and when rupture occurs internal podalic version done. If the os is only partially dilated when the membranes rupture, finish the dilatation manually, and do the version. If you wait for full dilatation, the uterus will come moulded round the child and version will become dangerous. When the liquor amnii has been drained away for some time, the risk of version must be borne in mind. If the child is alive, version may probably be done with little risk to the mother; but if the child is dead and the uterus retracted round it, decapitation is the proper operation, and it can easily be done with a cutting hook. The body

is delivered by pulling on the arm, which is generally down, and then the head is delivered by forceps. If the pelvis is contracted, it may be necessary to crush the head. Manipulate it into the brim of the pelvis so that the vertex presents, and get an assistant to fix it there while you perforate and crush.

Impacted Breech Cases.

In breech delivery the front hip leads, and it passes forward underneath the pubic arch. The posterior hip is then forced over the perineum by a bending of the body forwards under the pubic arch. This lateral flexion of the body occurs at the very outlet of the pelvis. In cases of impaction the legs are nearly always extended, and the cause of the delay is generally ascribed to the splint action of the extended legs preventing lateral flexion of the body. But the legs cannot act as splints. They are not rigid, as there is always a considerable lateral movement at the knees of a foetus, and they are only fixed at one end, viz., the hip-joint. Moreover, the arrest of the breech is not at the outlet, but much higher up, before lateral flexion of the body occurs. The true explanation of the arrest lies in the action of the retraction ring, which grips the child in the flexure of the knees or just below the feet, so that the child is hung up with its feet above the ledge-like ring round the interior of the uterus. Invariably there has been early rupture of the membranes with draining away of the liquor amnii. By the time the os is dilated the retraction ring has formed and gripped the body of the child. A careful examination will reveal a distinct ledge round the inside of the uterine cavity, and the feet of the child above it. With each uterine contraction the ring contracts and grips the child so firmly that descent is prevented.

Treatment.—Under deep anaesthesia pass the hand into the uterus along the abdomen of the child until the fingers reach a foot above the ring, then swing it inwards and bring it down by steady traction until the leg is straight. Deliver the body by traction on the leg, and while doing this have firm pressure kept up on the fundus to keep the arms down and the head well flexed, and finish the delivery in the usual way.

OUR CONTEMPORARIES. MEDICINE.

The Dangers of Lice.

(*Pediculus Humanus*)

PROF. G. H. F. Nuttall has a useful article on the *Pediculus humanus* in *Parasitology* (Vol. XI), from which we extract the following (*vide also Medical Officer* of 19th October, 1918):

Lice are generally considered as belonging to two groups—*Pediculus corporis* and *Pediculus capitis*, but “body lice and clothes lice (are) regarded as at most merely racial forms of the species *Pediculus humanus* Linnaeus.” Almost the whole poorer population in some countries is permanently infested with *Pediculus*. Historical evidence points to lousiness having been very general in all classes of European society in former times, and even in comparatively recent years the proprietor of one of the best hotels in Berlin informed Professor Nuttall that “he always sought to exclude even the highest nobility among the travellers from some countries because they so frequently infested his guests’ beds, thus necessitating a formidable process of de-lousing, which took away much of the profits their sojourn entailed.” In our schools the proportions of children found to be infected with *Pediculus capitis* were :—

	Boys.	Girls.	Infants.	Total.
1899 ...	16.3	50.3	26.4	30.1
1917 ...	7.8	28.5	13.5	15.5

An interesting observation by Sobel (of New York) is that negroes are less infested than whites, and that also the houses of negroes are mostly cleaner than those of alien whites, and, further, that negroes appear to take more care of their children’s hair.

* EFFECTS OF PEDICULOSIS.

In addition to the mental and moral effects of infestation with lice, there are other objectionable and dangerous results. The primary effects are slight, transitory pricking sensations with varying after-results—restlessness, lack of sleep, irritability, anaemia and general debility—but a tolerance to the presence of lice can be acquired in a relatively short time by some individuals. Subsequent effects of the activity of lice are :—

Urticaria (nettle rash).

Eczema (moist tetter).

Cutaneous pigmentation.

Skin diseases which may be spread by lice acting as mechanical carriers are :—

Favus (a disease of the hair follicles).

Pityriasis (disease of the skin due to fungus).

Impetigo contagiosa (scald head).

Furunculosis (boils).

Diseases which may be spread by lice as “specific” carriers :—

Typhus fever (gaol fever), by bite or crushing.

Trench fever, by excreta of lice.

Plague.

Relapsing fever, by crushing.

Very serious outbreaks of typhus fever—notably in the Serbian army—have occurred from time to time, and lice are invariably present in connection with such outbreaks. The destruction of lice upon a patient renders him innocuous.

“The treatment at present recommended in this country for the remedy of pediculosis in the head is as follows :—

1. The application of mercury ointment at night to kill any larvae and adults.

2. Washing of the head with soft soap and thorough rinsing with water in the morning, to remove dirt and ointment.

3. Soaking the hair with equal parts of vinegar and warm water for half an hour, with the object of loosening the nits.

4. Picking up the hair in strands and pulling the nits down the hairs and off at the tips, either with a very fine tooth-comb, dipped in the vinegar from time to time, or with a piece of linen similarly moistened and held firmly between the thumb and finger.”

1. As a first step in combating lousiness, it is essential to teach men what lice are and to tell them the harm lice may do.

2. Cleanly habits—including care of the head—will prevent infection.

3. One must not be deceived by the feigned appearances of death that lice may assume.

4. Useful remedies for lice in the head are :—

(a) Acetic acid, for removal of nits.

(b) Alcohol, with or without camphor.

(c) Benzine and Xylol (highly inflammable).

(d) Carbolic acid solution, pomade and oil.

(e) Chloroform water.

(f) Sublimate vinegar.

(g) Calomel pomade.

(h) Oleate of mercury and vinegar.

(i) Oil of Sassafras (objectionable from smell and soiling pillows, etc.)

(j) Oil of turpentine.

(k) Balsam of Peru with or without sulphur.

(l) Petroleum or petroleum vinegar (smell objectionable).

(m) Veratrine ointment.

(n) Staveacre oil or ointment.—*I. M. Gazette*.

Myxœdema with Predominant Mental Symptoms.

Herbert French, F.R.C.P.—The text-books say that patients with myxœdema are slow intellectually. But too little stress is laid upon the fact that occasionally the mental symptoms outweigh the better-known subcutaneous changes which lead to the peculiar facies; the swollen-looking hands, feet and legs; the broad nose and lips; the coarse hair and its tendency to fall out.

In the case of a lady the question was whether she should be certified as a lunatic. She would lie in bed for 24, 36, or 48 hours at a time with closed eyes, paying no attention to anything or anybody, and refusing all food. The doctor would go to see her the next day, thinking to see her in the same lethargic condition, but finding her instead wildly excitable, throwing things about, striking out at people who came near her, yelling, violent, maniacal. One never knew whether one would find her semi-comatose, or in acute mania.

Inquiry showed that these symptoms had been coming on slowly and steadily for over two years; and that although she so often refused food she had put on over two stone in weight in this time; obviously this was a pathological increase. The patient was not a typical myxœdema case from the spud-like hand point of view, but she had the localised malar flush; and—what often helps one greatly in the diagnosis of hypo-thyroidism—a curious translucent appearance of the outer half of the soft part of the upper eyelid. This sign will help in recognising cases which improve on thyroid extract long before they develop into definite myxœdema.

These points, associated with the increase of weight in spite of frequently not eating, suggested the use of thyroid extract treatment before certifying her. Small doses were given, and in six weeks she had lost her mental symptoms and was rapidly becoming her old self again both mentally and physically. She recovered completely, but continued to take 4 grains of thyroid extract thrice daily, a quantity which would upset a person who did not need it—a therapeutic test of the day.

Another patient with trouble of a similar kind came into hospital with drowsiness and such marked and progressive diminution of intellectual power associated with effortless vomiting and extreme headaches that a frontal tumour was diagnosed. She was trephined, but no tumour was found. Unfortunately, she died of erysipelas. At the necropsy the only peculiarity was that it took a long time to find even a trace of thyroid gland. It was dissected out and what was left of it was hardly anything but fibrous tissue; the right lobe, fibrous tissue, and all, weighed only 0.7 gram, and the left less still. The possibility of myxœdema with mental symptoms had not been considered.—*The Medical Review.*

Trench Fever—Analysis of Report of the American Commission.

SIR WM. OSLER.—The incubation period varies from 14 to 30 days, though if a large dose of the virus is acquired the period may be shorter. During the incubation period slight prodromata, as headache and pain in the limbs and slight fever, are occasionally noted. The onset is sudden in the form of headache, dizziness, pain in the legs and back and behind the eyeballs, particularly when moved, nystagmus on turning the eyes completely sideways, injection of the conjunctivæ, and a sharp rise of temperature to 103° or 104°. The fever in over one-half of the cases subsequently assumes a relapsing character. Enlargement of the spleen and the appearance of small erythematous spots or papules occur in from 70 to 80 per cent. of the cases. The erythematous spots are observed particularly over the chest, back, and abdomen. They are usually not raised above the surface, are pink, disappear on pressure, and generally measure about 2 to 4 mm. Occasionally the rash is distinctly papular. In number the spots vary from several to one or two hundred. They often disappear in less than 24 hours, and they may occur early, as on the second or third days, or be first observed just prior to or during a relapse. While no one of these symptoms can be regarded as characteristic or constant, the presence of several or all of them usually serves to make the diagnosis. The urine often shows a trace of albumin, but no evidence of nephritis. The leucocyte count is very variable. There is frequently a leucocytosis, and the leucocytes may rise at the time of the relapse. In other cases, however, the count may be normal or there may be a leucopenia.

The fever does not always follow a definite type, but many consist of, first, a short attack, lasting for about a week, with sometimes, but not always, after a few days, a single short rise; second, a more prolonged initial fever, sometimes lasting for 6 or 7 weeks, with relapses not distinctly marked; and, third, a more regularly relapsing fever, with more or less definite normal intervals, lasting from 5 to 7 days. Many variations of these types of fever are also seen, and in some of the patients there may be a long fever lasting from 40 to 60 or more days with only slight remissions. The number of relapses varies: 3 to 5 periods are common, and there may be as many as 7. Recovery follows in all cases.

Trench fever is a specific, infectious disease. The organism is a resistant filterable virus. This is present particularly in the plasma, which will produce the disease on inoculation. The disease is transmitted by the louse, usually by bite alone. The disease may be produced artificially by scarifying the skin and rubbing in a small amount of the infected louse excrement. A man may be entirely free from lice at the time he develops

trench fever, the infecting louse having left him some time previously. The virus is also sometimes present in the urine, and occasionally in the sputum.

Great care should be taken to disinfect completely patients as soon as practicable, particularly upon entering the hospital. They should be carefully bathed, and then sponged with alcohol. Their clothing and blankets should be removed, and, whether or not lice or ova are found upon them, should be carefully sterilised by moist heat at a temperature not below 70°C. for half an hour, since it is possible for the virus to be still present on the clothing. It should be borne in mind that a man with trench fever may be entirely free from lice at the time that he develops symptoms of the disease. Trench fever patients should at all times be carefully protected from louse infestation, and inspected for lice daily. They should be treated in separate wards. The urine should be sterilised during the active stages of the disease. Sputum cups should be provided, and expectorated sputum and saliva sterilised. The systematic destruction of lice should be performed and every effort made to prevent louse infestation among soldiers and to see that those infested are promptly disinfected and their clothing sterilised.—*The Medical Review.*

Cellulose and Chronic Constipation.

BY

MAJOR R. F. E. AUSTIN, R. A. M. C.,

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As the title of this article may suggest to some of the readers of *The Indian Medical Gazette* a plea for vegetarianism, I will begin by saying "Not guilty," and at once declare my belief that, generally speaking, there is no such thing as a bad food—be it animal or vegetable in origin. All the foodstuffs ordinarily used by the *genus homo* are good, when discrimination is exercised in their use. Indeed, discrimination in the use of the foods that man ingests is the solution of the vexed problem of diet.

That intestinal stasis or constipation has to be combated in most acute maladies, as well as in almost all chronic diseases, is a fact well recognized by every experienced medical man. Again, it is common knowledge that numbers of so-called healthy individuals suffer to-day from chronic constipation, and that the condition is recognized as inimical to health is proved by the fact that most of us try to keep ourselves fit by becoming the victims of the laxative or purgative drug habit.

Now, whilst the use of purgatives or medicinal laxatives is at times very necessary and always justifiable when required as a temporary measure, their routine employment is highly injurious to the stomach and intestines, as well as the liver and kidneys.

Van Noorden says, "Nothing is so bad as the chronic use of laxative drugs," and when it is remembered that they all force bowel action by irritation (wrongly termed by the laity "stimulation"), and constant irritation is harmful to the well-being of any tissue or organ, it is obvious that this eminent physician's teaching on the point is well founded.

Indeed, I do not think I am guilty of exaggeration when I state the average colon of forty years of age and upwards, in most civilised communities to-day, is in such a jaded, depressed or unhealthy condition, from the habitual use of purgative or laxative drugs, that it must either be removed or reformed to render life something very much more enjoyable than millions find it to-day.

The writer cannot accept the popular view that chronic intestinal stasis and its attendant evils are the result of man's so-called misfortune in having a long colon. Because some years ago after many disheartening failures to cure himself and others of chronic constipation, he discovered the remedy.

I found that the rational cure for the trouble, in adults, consists largely in cultivating the easily attained habit of living on two meals a day, the first of which is usually taken about mid-day and the other in the evening. Regarding the question of the food to be taken at these two meals, generally speaking, one should eat sparingly of body-building or protein foodstuffs (e.g., grains, pulses, nuts and animal food) and feed freely on fruits, salads and properly prepared vegetables. That is to say, vegetables that have not had their valuable food salts boiled out of them.

The rationale of the method appears to me to be as follows: Cannon's experiments show that bulk is a most effective means of stimulating the propulsion of food through the digestive tract. And segmentation of the intestines becomes really active only when the bowel becomes adequately distended. Bulk, not simply in the food itself but in the residue left after the absorption of the nutritive portion of the food, is a factor of prime importance in promoting expulsion of the bowel contents.

Schmidt and others have shown that an acid condition of the contents of the colon, brought about by the ingestion of fruit acids and the fermentation of starch and sugar, promotes bowel activity, whilst an alkaline condition of the contents of the colon, established by putrefactive changes occurring in albuminous or protein matter, tends to produce constipation.

By eating freely of fruits, salads and vegetables we obtain not only an ample supply of carbohydrates (the petrol of the body, so to speak), vitamins and food salts, but also a large non-putrescible acid residue, consisting of much unabsorbed starch and cellulose, wherewith to stimulate bowel activity.

On the other hand, when more protein is taken than can be digested and assimilated by the individual, the residue forms an excellent culture medium for the growth and development of harmful germs, and an alkaline condition of the colon contents is established, which makes for constipation. An evil smelling stool is evidence of this mistake. As is well known, a healthy, natural motion has little or no unpleasant odour.

The young of man and animals furnish a striking proof of the fact that only a small quantity of protein is required daily. For they not only live, but grow, on milk—a food which contains not more than $3\frac{1}{2}$ per cent. of protein.

Without doubt, a low protein intake with plenty of water, starch, sugar and unabsorbable cellulose is the normal diet of man, as it is of other animals that, like him, possess a long sacculated colon, such as the horse and man's cousin—the ape.

High protein feeding animals, such as lions, tigers, dogs and cats, on the other hand, have a short smooth colon. Consequently, the movement of foodstuffs along this short smooth passage is rapid—a provision of nature, which is necessary for the health of these animals, since the undigested remnants of their diet, of flesh skin and bones, if long retained in the colon, would undergo putrefactive changes and produce poisons of a character dangerous to these creatures.

Experience has proved to me and many others that by taking only two meals daily, at the times already specified, a very keen appetite for each of the two meals will generally be present. And sufficient food of the right kind can be taken to provide the bulk and stimulation necessary to produce one, if not two, good bowel movements daily. Speaking of myself, I rarely fail to have two good bowel movements a day.

On the other hand, if the same quantity of food that is taken at the two meals be divided into three or four meals, the smaller-meals will not, as a rule, produce even one good daily movement, let alone two.

As a matter of fact many so-called healthy people, who make a boast of being small eaters, are always constipated. Even if the bowels are moved once a day, the discharged matter should have been got rid of twenty-four or forty-eight hours before. In other words, they suffer from latent constipation, the evil results of which, in the long run, do not materially differ from those of other forms of constipation.

In this connection it should be remembered that an important factor in the prevention of putrefaction in the colon is rapidity of the movement of the body wastes and food residue along this portion of the alimentary tract. Even though the quality of food is such that it does not conduce to putrefactive changes taking place, putrefactive organisms in the colon can always

find in the epithelial cells cast off with the bile and other secretions, enough protein material to support their growth and development, provided there is sufficient delay in bowel movement for these processes to become firmly established.

As a rule, I find little, if any, difficulty in convincing intelligent patients of the necessity for eating two good-sized meals of the right kind in the day, when in health. But they require a very great deal of assurance against some of the supposed dangers of going about with an empty stomach in the morning. Amongst the most common of these are the following, with my comments thereon:—

“Is there not a great risk of getting cholera, enteric fever and dysentery from going about with an empty stomach in the morning?” No. These diseases are contracted by ingesting food and drink contaminated by the organisms that are the exciting cause of the disease. Obviously, then, if you do not eat, and only drink some weak tea, you cannot possibly put the germs into your stomach and run the risk of falling a victim to these complaints.

Here I may state that in a letter on “Gastric Juice and Prevention of Enteric Fever and Cholera,” published in *the Journal of the Royal Army Medical Corps*, February, 1916, I pointed out that Pawlow's gastric experiments prove that mechanical stimulation of the stomach (*i.e.*, the mere act of putting food into it) does not constitute an effective excitant of the gastric glands. A passionate longing for food—psychic stimulation—and the satisfaction of thoroughly enjoying it, is necessary for the most intense activity of the gastric glands.

I further showed that both officers and men frequently rendered themselves liable to contract cholera, dysentery and enteric fever by eating when they were fatigued and had no appetite, and suggested the remedy. My argument was that if gastric juice can digest the protein contents of food, when a keen appetite and therefore a sufficient amount of gastric juice is present, it is also equal to the task of digesting enteric, cholera and other bacilli, which after all are nothing but mere masses of protein.

“Is it not a fact that people who do not eat *chota hazri* or breakfast get malaria?” I shall answer this question by asking another, “Are you quite certain that those who take *chota hazri* and breakfast are immune from attacks of malaria?” Believe me, a mosquito net is a far greater defence against the insect which inoculates us with the malarial parasite than food in the stomach.

“What about the protective influence of *chota hazri* and breakfast against sunstroke?” Sun-stroke is caused by the rays of the sun beating on

the back of the head and spine, and however full of food your stomach may be, it cannot possibly keep the sun off these vulnerable parts. I, in common with many others, find that a good pith topi or sun umbrella is a very much greater defence against sunstroke than food in the stomach.

Barely two centuries ago, the first meal of the day in England was taken at about noon. Breakfast was an unrecognized meal, and it originated in the practice of ladies taking an early dish of chocolate before rising. As for *chota hazri*, thousands of Europeans who come to India to-day have never indulged in this small meal at Home. Truly, popular tastes and prejudices are rooted more in social habits than in basic physiological demands.

Those who suffer some discomfort in the morning when they first make a change in their mode of living, will find if they take a good saline purge on rising, any unpleasant symptoms which may arise from going about without *chota hazri* or breakfast, will disappear after the second or third morning. Indeed, I generally advise all my patients to take this precaution for the first two or three days of the new regime.

We have seen that the human alimentary canal is adapted for the use of somewhat bulky and moderately coarse foodstuffs, and that cellulose is as necessary as nutriment. The following useful table extracted from Dr. Kellogg's book, "Neurasthenia or Nervous Exhaustion," shows the amount of cellulose contained in an ounce of different foodstuffs:—

Cellulose Contents of Common Foodstuffs.

VEGETABLES.

	Number of grains of cellulose in one ounce.				
Cabbage ...	...	...	...	...	9.2
Parsnips ...	...	...	...	...	8.6
Brussels sprouts ...	...	...	...	...	7.8
Celery ...	...	...	...	...	7.0
Turnips ...	...	...	...	...	6.6
Pumpkins ...	...	...	...	...	6.1
Melons ...	...	...	...	...	6.2
Potatoes ...	...	...	...	...	5.4
Beetroot ...	...	...	...	...	5.2
Asparagus ...	...	...	...	...	5.2
Carrots ...	...	...	...	...	4.9
Spinach ...	...	...	...	...	4.6
Cauliflower ...	...	...	...	...	4.5

Tomatoes ...	...	...	...	...	4.2
French beans ...	...	...	...	...	4.0
Cucumber ...	...	...	...	...	3.9
Lettuce ...	...	...	...	...	3.6
Onions ...	...	...	...	...	3.5

PULSES.

Beans (dried) ...	...	...	...	...	40.0
Peas (dried) ...	...	...	...	...	28.5
Lentils ...	...	...	...	...	20.5
Green peas ...	...	...	...	...	9.3

GRAINS OR CEREALS.

Bran ...	...	...	...	...	200.
Oatmeal ...	...	...	...	...	44.
Barley ...	...	...	...	...	20.
Wholemeal wheat flour ...	...	...	...	...	10.
Cornmeal ...	...	...	...	...	10.

FRUITS.

Raspberries ...	...	...	...	...	37.
Blackberries ...	...	...	...	...	25.
Cranberries ...	...	...	...	...	25.
Currants ...	...	...	...	...	23.
Figs ...	...	...	...	...	22.5
Gooseberries ...	...	...	...	...	17.5
Pears ...	...	...	...	...	15.
Apricots ...	...	...	...	...	12.5
Oranges ...	...	...	...	...	10.
Prunes ...	...	...	...	...	10.
Cherries ...	...	...	...	...	10.
Plums ...	...	...	...	...	7.5
Grapes ...	...	...	...	...	7.5
Apples ...	...	...	...	...	5.
Peaches ...	...	...	...	...	5.
Bananas ...	...	...	...	...	1.5

In certain cases of constipation where a sufficiency of fruits, salads and vegetables cannot be taken to produce the hoped-for result, I prescribe the use of cellulose in concentrated form, i. e., wheat bran and agar-agar.

Wheat bran, as will be seen from the above table, contains 200 grains of cellulose to the ounce, and is probably the oldest and best remedy for constipation. It may be freely used in a number of palatable and efficient ways. For example—mixed with fish cakes, or with minced meat. It can

also be used in the making of biscuits and bread. Or it can be added to mashed potatoes and other vegetables. At least one to two tablespoonfuls of bran should be taken with each of the two daily meals.

Properly sterilised and cleaned, wheat bran, when well moistened, becomes soft and pliable as wet paper, and excites bowel action—not only by giving sufficient bulk to distend the intestine but also by gentle titillation, so to speak.

The apprehension that some writers have expressed regarding the irritating effect of bran is wholly imaginary. When properly cleaned and sterilised, I have used it in a number of cases of chronic colitis, with nothing but excellent results. Colitis is the result of constipation, and this will only be aggravated by the bland, concentrated diet which is usually recommended for the disease. Experience has proved to me the value of bran, coarse vegetables, and other bulky foodstuffs in chronic colitis, as well as in constipation.

Agar-agar or hemi-cellulose, commonly known as "Japanese Seaweed," may also be used with advantage in all cases of sluggish bowel action. Experiments carried out by Mendel, Kellogg and others, show that it cannot be digested by any of the fluids of the body, with which it comes in contact.

I usually order it to be taken as a jelly made up with stewed fruit. It is an excellent remedy for preventing hardened residues in the intestines, owing to its astonishing avidity for water.

Purified Russian paraffin oil is another remedy I make use of at times. But as I realize the fact that the natural lubricant of the cæcum and colon is not paraffin, but a sufficiency of water and cellulose, I do not encourage the habitual use of paraffin, except when a mechanical intestinal lubricant is required to overcome "kinks" due to redundancy of the colon, from long continued distension, or to adhesions arising from colitis or other causes.

In addition to the regimen already specified, constipation requires for its cure, properly regulated deep abdominal manipulations, systematised respiratory exercises and a correct carriage of the body—measures I personally use, and also advise and teach my patients to do the same.

Deep abdominal manipulations and systematised respiratory exercises vigorously knead and squeeze the colon, whilst a proper carriage of the body places the respiratory muscles at the best mechanical advantage for correct breathing, and favours the brisk circulation of blood in the abdominal viscera—one and all factors of importance in promoting bowel activity.

Some twelve years ago I cured myself of constipation of many years' standing by learning to habitually hold myself in a properly erect posture,

and taking steps to re-educate my respiratory muscles to perform their functions in an efficient manner.

Some eighteen months after the change I had thus brought about in myself, I found that my bowels again began to give me trouble. But shortly after bringing into use the dietetic method already described, I had no further trouble with constipation.

I still find, however, that if I am at all slack in taking my daily dose of respiratory exercises, or make careless departures from my usual diet, my old enemy returns to worry me. The moral of which, to me, is, "Don't be a slacker about exercises or careless with diet." But my experience, after all, is only the same as that of my patients.

The two most important factors in the prevention and cure of chronic constipation have, I think, now been sufficiently clearly dealt with, and I am sure that the aid of drugs or surgery would rarely be required if the measures I have placed before the reader are thoroughly and perseveringly applied.—*I. M. Gazette.*

SURGERY.

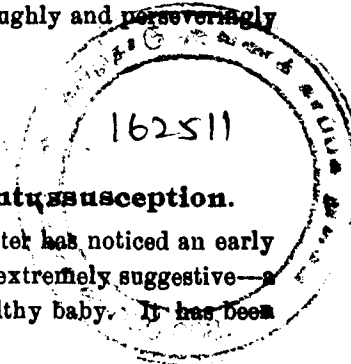
Change of Colour in the Diagnosis of Intussusception.

D. G. GREENFIELD, M. D., F. R. C. S.—The writer has noticed an early symptom of intussusception which he regards as extremely suggestive—a sudden change to an ashy grey colour in a rosy healthy baby. It has been very striking in three cases.

When visiting a cottage the writer was called to the next house, where the baby had just had a "fit." It was a strong, healthy child, which had just had a normal motion. It was not convulsed, but was obviously in pain and grey. The writer examined the abdomen, and thought he felt a tumour. Rectal examination revealed nothing. The child soon recovered and seemed quite well, its normal colour returning. The writer cautioned the mother about the passage of blood, which happened about 8 hours afterwards, when the child was forthwith operated upon. In this case the child was seen just as the intussusception occurred.

In the next case the baby was seen about 6 hours from the beginning, and some bloody mucus had been passed. Every few minutes the rosy colour faded away, and the child looked grey and ill. The writer had little doubt of the diagnosis without examination of the abdomen, which revealed the tumour.

The writer was called to see a baby because it had suddenly gone grey. He suspected intussusception. The child was tender in the right flank.



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and he was uncertain whether there was a tumour to be felt. The bowels had been moved and the napkin was inspected. Nothing could be detected by rectal examination. This was at 7 p.m. The writer was called again about 10 and a normal motion had been passed. The child had not vomited and seemed comfortable. At 6 o'clock he was roused as the child had passed some jelly and had been once sick. Still he was uncertain as to the presence of a tumour, and called in a friend in consultation, who was no more certain. They decided to examine under an anæsthetic, when the tumour could not only easily be felt, but could be seen moving with respiration.

No doubt this change of colour would occur with any acute abdominal condition in babies, but if it happened in another case, when there was suspicion of an intussusception, the writer would have no hesitation in giving an anæsthetic for examination.

Another point is the temperature. When a child has passed blood and mucus from any other cause, there is likely to be some alteration in temperature. At the beginning of acute colitis it will probably be raised. Certainly in the first few hours, a raised temperature would be much against intussusception. In the later stages, collapse would cause a subnormal temperature, as would happen in the exhaustion stage of intussusception, but then the favourable moment for the surgeon has passed.—*Medical Review.*

Dryness of the Tongue a Sign of Perforation in Biliary Colic.

Prof. Rovsing, a man aged 46, had previously been quite well when, in April 1917, he developed severe pain in the right hypochondrium, whence it radiated to the right shoulder. During the following 7 months he suffered from several similar attacks, which lasted 2 to 24 hours, but did not make him stay in bed. During these attacks the motions were pale and the urine was dark. Late in Oct. an attack was accompanied for the first time by jaundice. On Nov. 7 a violent bout of pain, beginning in the epigastrium and shifting to the right iliac fossa, sent him to hospital.

Here he stated that the motions on the previous evening had been hard and pale, that he had not passed flatus since, and that though he had vomited more than once shortly before admission, he had felt much better a few hours before reaching hospital, the vomiting ceasing and the pain getting less. The resident surgeon who examined him on admission at 10 P. M. found little amiss. His general appearance was normal, the pulse was 80, strong and regular, and the temperature was 98.6°. The urine was normal, and there was no abdominal distension. There was, however, definite *defence musculaire* on the right side, notably over McBurney's point, with some

tenderness on deep pressure. At first Prof. Rovsing agreed with his assistant as to adopting an expectant attitude. But he reversed this opinion as soon as he saw the patient's tongue. It was perfectly dry. This at once put an ominous complexion on the other symptoms, and immediate operation was decided on.

As soon as the peritoneum was incised, greenish-yellow, mucous pus welled up from all directions, especially from the right iliac fossa. The cæcum and appendix were healthy except for a superficial coat of pus and incipient injection. The liver and gall-bladder were cut off from the lower abdomen by extensive adhesions about the omentum, colon, stomach and duodenum. These adhesions being freed, the gall bladder was exposed and found to be perforated. Its fundus was friable and gangrenous, and its walls were thickened, infiltrated and rigid. There was no stone in the gall bladder but at the junction of the cystic with the common bile duct was a stone of the size of a hazel-nut. It was pushed back into the gall bladder and removed in several pieces. The pus, which contained coliform bacilli, was mopped up, the peritoneal cavity was freely irrigated with saline solution, adequate drainage was secured for the deeper recesses of the abdomen, including the pouch of Douglas. Recovery was much delayed by attacks of vomiting, induced, probably, by part of the duodenum having been involved in the inflammation of the gall bladder.—*Medical Review.*

Correction of the Deformity in Greenstick Fractures by Continuous Elastic Traction

W. G. Vincent at a meeting of the New York Surgical Society, in 1916, Alfred S. Taylor described an elastic traction method of treating Volkmann's ischemic contracture (Ann Surg., 1917, 65, 28). The apparatus consisted of a padded leather sleeve extending from elbow to wrist. To the sides were attached two steel bars with an adjustable offset at the wrist which could be made to project at any desired angle over the hand and fingers. A broad pad in the palm was later extended to support the fingers also. Elastic traction was applied by ordinary commercial rubber bands which passed under the palmar pad and over the notched projecting steel bars. The size and number of rubber bands varied in accordance with the requirements of the case. Taylor presented one case and reported several others which had been treated by this method with brilliant results, the continuous slight, but insistent, traction, day and night, ultimately overcoming the contracture. It occurred to the writer that elastic traction would be of benefit in greenstick fracture of the forearm in children.

A boy, aged 17 months, was brought to the New York Post-Graduate Hospital Dispensary, with a history of having fallen about 3 weeks previ-

casty, and having received an injury to the left forearm. There was marked bowing of the forearm. A diagnosis of greenstick fracture of both bones of the forearm was readily made, and was confirmed by radioscopy. The callus was still so soft that the arm could be partially straightened, but there remained a certain amount of convexity of the posterior surface that tended to become more pronounced as soon as the corrective force ceased.

A padded wooden splint reaching from the elbow to the palm was applied to the anterior surface of the forearm and held in position by adhesive plaster strips. A fairly thick gauze pad, about $1\frac{1}{2}$ inches square enclosing a bit of splint wood, was placed over the most prominent point on the back of the forearm, and a rubber band $\frac{1}{2}$ or $\frac{3}{4}$ inch wide was slipped over the hand and arm so that it encircle the arm at the centre of the gauze pad, and was held in position by a strip of adhesive plaster. The rubber band was under moderate tension, and caused no interference with the circulation below that point. A gauze bandage was applied so as to be snug but not compressive from the palm to the elbow. After a week the bowing had markedly decreased. But as the elastic band had been allowed to touch the skin at each border of the arm, the skin had been partially cut through. This mistake was corrected in subsequent dressings by making the splint on the concave surface somewhat wider than the arm, and passing a broad strip of adhesive plaster rather loosely around the arm, over the splint and the gauze pad which had been placed at the point of greatest convexity; the rubber band then being adjusted over this and held in position by short, vertically placed adhesive strips anteriorly and posteriorly. All traces of bowing disappeared in less than 3 weeks.

The writer has used this device in several other cases of greenstick fracture of one or both bones, always with the same happy result. The results have been equally as good in cases of several weeks' standing as in those seen within a few days after the fracture; apparently the only difference being in the length of time the elastic traction has to be applied. Besides the simplicity of the method and perfection in results thus far obtained, another advantage is that with proper technique the straightening seems to be entirely painless. The writer thinks that if elastic traction is used from the first in green stick fractures of the forearm, it should rarely, if ever, be necessary to complete the fracture in order to ensure a straight arm.

Tetanus.

BY NORONHA, M. D.,

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It was said by some one that we knew very little more about Tetanus than what Hippocrates did. To a large extent this is true. The war has

however, served as a stimulus to its study, considering the toll exacted by the malady among our wounded. My line of inquiry at the J. J. Hospital has been directed towards the following points:—

- I. The value of anti-tetanic serum as a curative measure.
- II. The use of carbolic acid in the disease.
- III. The existence of clinical symptoms referable to the brain.
- IV. Trismus and its relation to the course of the disease.
- V. The degree of anæmia and its possible causation.

In a paper read in July last before the Bombay Branch of the British Medical Association, I have detailed the several observations made in connexion with this disease till 31st May, 1918. In the present communication I shall omit, as far as possible, all statistical details which will be given in due course before one of the Medical Societies of Bombay.

It is needless to point out that in civil practice the material is too scanty to allow of an exhaustive study. War conditions also do not allow of an adequate supply of anti-tetanic serum, so that one is forced back on mixed treatment, to be able to say that all has been done to the victims of this affection.

I. The value of anti-tetanic serum in the fully established disease is difficult of appreciation. There are some cases that look very mild at the outset, but which in a few hours show so grave an aspect that no amount of serum will save them. Other cases show severe signs at first but improve after the very first dose of antitoxin given intravenously. These cases invariably recover. Others remain stationary with frequent fluctuation in the symptoms. These have a chance of recovery, but may get worse and end fatally. This leads me to think that the course which the disease takes depends on various factors, the chief of which are the following:—

1. The virulence of the infection.
2. The amount of toxin absorbed by the nervous system.
3. The early involvement or otherwise of the vital centres.
4. The site and nature of the wound.

In considering these points one must first decide whether the cases that recover under serum treatment would recover without its use. To do this one has to fall back on figures. During the last one year I have had 66 admissions in my wards, and two cases have been treated in private practice. Some of the hospital cases came in so bad that they died before I had the opportunity of seeing them. For our present purpose these may be dismissed from our reckoning. This leaves us a balance of 55 and two other cases mentioned. Again out of these 57, 53 received serum treatment with a mortality of 28, which means 32.83 per cent. in serum cases as a whole, and 50 per cent. of the total hospital admissions, including every case that

came into the ward. These figures compare very favourably with the past when serum was not used at all or when it was supplied in too small a quantity to be of much use (vide *Lancet*, December 22, 1917; for figures, see article by Cooper). Unless one considers this a *lucky series*, it is impossible to avoid the conclusion that serum has been instrumental in reducing the hospital mortality to some extent at least. At present I am using an average of 22,000 units for each case as a whole, a quantity that is recommended for one single dose! It is not practicable to use more as our conditions do not permit it. It may here be noted that the improvement in the mortality has been more or less proportionate to the amount of serum used.

Now for the points mentioned:—

1. *The Virulence of the infection.*—If the infection be a virulent one there is a chance that before treatment is commenced a sufficient amount of toxin will have been absorbed so as to seriously interfere with the vital centres. The current opinion is that toxin after becoming an integral part of the nervous system is impossible of neutralisation. Absorption is more likely to occur sooner when it takes place directly from the blood so that trismus is an early symptom. The more complete the latter and the sooner it appears in all its vigour, the more likely is the case to prove fatal, granting the wound to be outside the sphere of influence of the 5th nerve in which case lock-jaw appears very early. This exception, however, should not be too literally taken.

2. *The amount of toxin absorbed by the nervous system.*—This is far more important than the previous, although both exist as cause and effect. As already said, nothing can be done when a lethal amount of toxin is absorbed. A sublethal amount may be prevented from increasing by immediate and repeated injections of antitoxin, given preferably intravenously in nonsensitised cases, provided that the dose is large enough. This should be accompanied by sterilisation of the site of injury without any active surgical interference. Later experience has taught me that it is best even to discard cauterisation with carbolic acid.

3. Early involvement of the diaphragm and muscles of deglutition are very unfavourable signs and in all such cases serum has proved of no avail with me. This point was noticed quite early and has been amply borne out by later experience.

4. *The site of the wound and its character.*—It is well known that tetanus toxin is carried by nerve protoplasm of the motor nerves. This view has been based by Meyer and Ransom on their experiments with *tetanus dolorosus*. It stands to reason, then, that the closer the wound is to the medulla, the shorter the route by which the toxin reaches the vital centres. Granting a degree of slowness of entry on the part of the toxin into the blood,

one may reasonably expect the sole of the foot to be a more favourable site than the head. It should be remembered, however, that the situation of the wound is of no importance if the toxin is being poured into the blood in a stream or at any rate in a sufficient quantity to constitute a lethal dose, before it reaches higher up by its circuitous nervous route. This is what happens in the majority of cases with wounds below the neck, so much so that till quite recently early lock-jaw was considered one of the diagnostic features of tetanus.

Ragged wounds with a deal of undermining favour the growth of the tetanus bacillus for obvious reasons, these being deficient aeration and difficulty of cleaning. Some cases of idiopathic tetanus are very severe, and stand a poorer chance of recovery than many others equally severe the inoculating site of which is accessible to irrigation. This statement is based on two cases only.

II. My later experience with carbolic acid bears out what I first stated, viz., that the drug often controls spasms when serum does not. It prevents in this fashion the exhaustion that adds so much to the gravity of the patient. As an adjuvant it is, in my opinion, to be recommended. It has not been tried independently.

III. In my earlier paper I had mentioned that one comes across cases with physical symptoms, temporary or permanent. Another such instance has come to my notice. It may be remarked that in one case these symptoms were present even before treatment was ordered, so that there is no reason to suspect drug influence. On these grounds I had ventured to suggest that they may be the clinical representative of the *cerebral tetanus* experimentally produced by Roux and Borrel. This was to some extent substantiated by post-mortem findings in one of my patients where the frontal lobes were found cedematous. Sections from this part of the brain showed mere congestion. The thyroid had excess of colloid and a hæmorrhage was present in one of the adrenals, as also in the medulla. For these findings I am indebted to Dr. Ajinkia of the Histological Laboratory.

IV. In my earlier experience I had noticed a case of general tetanus without any trismus. I was beginning to think that the site of the wound might have something to do with the delay of this symptom. It is needless to say that this has been amply disproved by my own experience. This point is fully dealt with elsewhere. Contrary to the possibility assumed by Golla, I had laid down, however, that this variation was not due to any prophylactic injections. None of my cases received a single prophylactic dose. I fully concur with his view that a longer incubation period is met with in such cases, thus suggesting that weakness of the toxin, however produced, or an increased resistance on the part of the patient, are the factors to be looked upon as the common causative factors.

V. Tetanus toxin is said to consist of tetanospasmin and tetanolysin. So far as I could ascertain, there has been no definite isolation of these substances effected. I am just trying to see, if there is, from the clinical point of view, any justification for splitting the toxin into these two components. Comparison is notoriously uncertain in a disease like tetanus. The uncertainty becomes all the greater when we have to deal with a symptom like anæmia, the etiological factors of which are so varied. With such prospects in view it is not possible to confidently expect any reliable results; moreover, error in counting has to be reckoned with in appreciating small differences. Some reliance may be placed on two comparative counts taken on definite days in surviving cases and it is on these lines that my present work is being directed.

As regards treatment, this has been detailed in the paper referred to. I have come to the conclusion that the intravenous method is the best. As regards the intrathecal, I cannot lay claim to any conclusion as it has not been much used. Intramuscular injections in the few cases in which they have been used have not proved successful. The difference probably lies, when one compares with results of war experience, that I have had dealings entirely with nonsensitised cases. There have been no anaphylactic phenomena in consequence.

N.B.—Fixation of the diaphragm in a case of general tetanus does not mean a spasm of this muscle and may be brought about by other factors. This is not therefore an indication of fatal issue. But if it is an initial sign and if to this is added difficulty of swallowing, the course of the disease is, so far as my experience goes, invariably fatal. Of late I had a case where swallowing was the only thing interfered with. I find a reference to this in the monograph of Courtois-Suffit and Giroux, as also in the medical papers. This condition is described as *splanchnic tetanus*. *Indian Medical Gazette*.

THERAPEUTICS.

Treatment of Facial Erysipelas by Collodion Circumscription.

Lieut. A. A. Avata and Major Rollin T. Woodyatt.—Between November 6, 1917, and May, 15, 1918, 104 cases of erysipelas were treated at the base hospital at Camp Cody. Most of these began on the face. The disease followed drainage of the mastoid in 7 cases, abscess of the scalp in 3, ulcer in the nose in 3 cases, hordeolum in 1, and burns of the face in 1. The remaining 90 cases were called "idiopathic." On certain occasions an influx of such cases was noted after a period of high winds and dust storms, such as characterize this place and favour development of inflammations of the mucous membranes of the head generally.

Most of the methods of treatment were tested, including a sensitized streptococcus vaccine prepared from the mastoid cases. None showed any marked superiority over certain others, until the method of collodion circumscription, first described in 1892 by Nishans, was tried. The results were striking. The cases treated by all other methods averaged 8.1 days of fever and 30.4 days in hospital. (The patients were discharged when redness, swelling and desquamation were all gone.) The patients treated by collodion circumscription averaged 3.5 days of fever and 15 days in hospital.

Collodion, U. S. P. (non-flexible), is painted with a cotton swab or brush to form a strip $\frac{1}{2}$ inch wide and from $\frac{1}{2}$ to 1 inch in advance of the line of induration, so that the diseased area is completely circumscribed. The collodion strip is painted over repeatedly until, when dry, it makes a deeply constricted furrow not broken or imperfect at any point. On the following days the collodion line is inspected for breaks, cracks, or inadequate constriction at any point; if found, these are repaired by further coats of collodion. When enough collodion is used to produce a continuous and sufficiently deep (from $\frac{1}{2}$ to $\frac{3}{4}$ inch) linear constriction of the skin, the erysipelatous induration advances to the collodion, but not beyond it. The collodion is left in place until the temperature and swelling have wholly subsided. If there is a break in the collodion line or if the skin constriction is too shallow, the disease may pass through or under it. Presumably, success depends on a complete constriction of the lymphatics of the skin through which the infection travels.

Some ingenuity may be exercised in laying out the line on which the collodion is applied when dealing with erysipelas involving different parts of the face, head, neck, etc. In cases beginning about the ear it has been found feasible to clip the hair and encircle the ear. For unilateral patches on the face which have approached one eye but have not involved the nose, the line may be drawn up the nose between the eyes and around the lesion, leaving one eye within the circumscribed area, but saving the other.

Within the circumscribed area, the inflamed skin swells intensely, apparently more intensely than in uncircumscribed cases; but this appearance is mainly due to the contrast between the swollen area and the line of depression caused by the collodion. Patients do not complain more of discomfort or of the sensation of tightness, when so treated, than those not circumscribed. On the contrary, patients complained that they were not given the benefit of circumscription. Toxic effects are less than when the disease is permitted to involve wide areas of skin.

The collodion treatment is supplemented by the continuous application of cold compresses wet with a saturated solution of magnesium sulphate, and by general measures, for any febrile condition.—*The Medical Review*.

A Simple Physical Method of Inducing Sleep.

BY

G. KING MARTYN, M. D., CANTAB., D.P.H.

Regarded from a public health point of view, the great drawback of the human body as a dwelling-house for the soul is the indisputable fact that the soil-pipe runs through the centre of the building. No modern architect would tolerate this for a moment. And yet it is difficult to see how else matters could have been arranged. It would hardly do for a man to walk abroad with yards of ilium and colon carried in a sort of marsupial pouch, much as the fashionable lady carries her marmoset or Pekinese in her enormous muff.

No—evolution has left the intestinal sewer there, and evolution generally knows. But on the top of evolution has come civilization. And by civilization I mean an age-long process of steady diversion of organs and habits from their right and proper functions.

Our intestines are going. The "dura ilia" are no more. Does any one believe that pre-historic man suffered from gastric ulcers, duodenal ulcers, colitis, appendicitis, or Lane's kink? No—he never had any of them, and there were no surgeons to tell him he had them. *Tempora mutantur, hence intestinal toxæmia* and a host of other kindred evils.

Sleeplessness is due to many causes. The most fertile cause is irritation of the brain by messages from the abdomen. I would venture so far as to say that flatulent dyspepsia is the cause of nine out of ten cases of insomnia.

Take the earliest example—the infant "muling and puking in its nurse's arms"—keeping its careworn parents awake half the night. Why does rocking the cradle or "dandling" in the arms so often soothe and produce sleep? Because owing to the constantly changing axes of the loops of intestines the bubbles of wind are enabled to pass on. "The hand that rocks the cradle moves the wind." Far better than "ruling the world"! For just the same reason the sleepless adult tosses on his bed from side to side. By so doing he involuntarily coaxes the flatulence to move on from loops of intestine, where it has been accumulating and sending those disturbing messages to the higher centres. And hence many a patient will sleep better after a dose of calomel or blue pill than after one of the recognized hypnotics.

Where is the chief accumulating place in the alimentary tract for wind to collect—in other words, where are the gas works?

I am convinced it is the cæcum and that part of the colon below Lane's kink—the abdominal cess-pool. And by colonic stasis the ilium behind this part becomes dilated with wind.

The physical method by which I propose to overcome this impasse is stimulation of the bowel wall. If the patient has the necessary "Tactus eruditus" and the patience to carry out the instructions, he can quite well do it himself—otherwise skilled help must be employed. The technique is as follows: *First*, the patient lies on his back with the knees drawn up to relax any tension of the abdominal walls. Then the tips of all four fingers of the right hand are employed in gently "brushing" the skin of the abdomen—barely touching it—and always in a circular direction. The movements should be begun low down below the umbilicus, and followed round to the iliac fossa, and then, following the course of the ascending colon, up to the costal margin. *Most time should be spent over the iliac fossa.* When the costal margin is reached the hand is moved again to the initial point and the manœuvres repeated again and again. *Secondly*, the whole of this process is repeated with the patient lying on his left side—the knee still drawn up. *Thirdly* and lastly, the same process is gone through with the patient in the final position for sleep—on his right side, the left hand being now used for the "brushing."

Some will say, "This is just abdominal massage." It is not. It is re-education of the nervous reflex and the muscular contraction of the bowel wall by stimulating the nerves of the overlying skin. In nine cases out of ten, after five minutes of this circular "brushing," borborygmi will be heard gurgling through the ilio-cæcal valve and passing up the colon. After a little longer wind will probably be passed per rectum. Sometimes these movements must be kept up for thirty minutes before a response is heard, and it may be necessary to include in the "brushing" not only the iliac fossa and the ascending colon, but the whole tract of the colon right round—remembering that the transverse colon sags like a washing line between its two posts. The manœuvres should be persevered with as long as any wind is heard to be moving, and then the patient will in all probability settle off to sleep.

Deep abdominal massage may be of use if there are impacted lumps of faecal matter, but I believe harm is often done by too vigorous massage to a dubious appendix or gall bladder, and in such cases a high enema (or plumbic douche) is a better measure.

The writer hopes that some of his readers may be led to adopt this treatment, which, simple as it may seem, has often enabled him in many cases to consign barbitone, bromide, *et hoc genus omne*, to the waste paper basket.—*The Medical Press.*

The Paraffin-Wax or Closed Method of Treatment of Burns.

BY

WILLIAM O'NEILL SHERMAN, M.D., F.A.C.S.

One of the basic principles in the treatment of burns has been to exclude the air. This cardinal factor has been well known for centuries. Notwithstanding this recognized principle, not until Barthe de Sandfordt perfected a mixture of paraffin and resin (Ambrine) were we able to supply a satisfactory dressing which actually excluded the air.

Sixteen years ago in China, Barthe de Sandfordt, first applied his paraffin wax for the treatment of burns. The results secured caused him to experiment further in the use of these mixtures. Finally a combination was perfected and placed on the market under the trade name of "Ambrine." Five years ago, attempts were made to market this product and to introduce this treatment in the United States. They met with failure; first, because the principles advanced were contrary to previous ideas, theories, and practices; second, the treatment was advocated for conditions where it was of questionable value; third it was a patented preparation.

It was not until the present war that de Sandfordt was privileged to treat a large series of cases and prove the merits of the method. However, the results obtained were self-evident and spoke eloquently of the new method and it was not difficult to forget former theories and ideas. There was no alternative.

To seal up an infected burn was thought to be contrary to all sound surgical principles. Notwithstanding this, the patients were being dressed without pain; they were recovering two to three times more rapidly than under former methods, and free from cicatricial contraction with a minimum of scar tissue. It must not be assumed that all third and fourth degree burns heal without any scar tissue formation. There is some scar tissue, but it is infinitely less than with any other method and does not have the tendency to contract, so that the frightful disfigurements and loss of function are practically eliminated.

After the first 24 hours, the patient is free from pain in the vast majority of cases. This one factor alone justifies its use.

PRINCIPLES OF TREATMENT.

All burns, regardless of character, are thoroughly dried and an air-tight coating of paraffin wax is applied to the burned area, including one-half inch of the immediate margin of skin adjoining the burned area. A thin layer of cotton is then applied which is incorporated into the first film of paraffin wax by painting with a fine varnish brush sufficient wax to completely impregnate

the cotton. The wax "sets" in a few seconds. The dressing is then completed by swathing the entire waxed area in cotton and bandages. All burns are re-dressed every twenty-four hours. The wax method does not contain any specific curative medical ingredients but acts entirely mechanically allowing nature to heal under conditions favorable to repair. The wax cotton dressing is a non-adhesive shell which excludes the air, maintaining a constant temperature, and forms a protective dressing to the proliferating tissues under the best physiological conditions, allowing regeneration and restitution along natural lines. The wax serves as a superstructure or scaffolding, and protects the new epithelium which rapidly regenerates. The dressing serves as a poultice, splinting and holding at rest the traumatized tissues. In a short time secretions form under the dressing which makes it non-adhesive and easy to remove without pain or bleeding or destroying the new regenerated epithelium, thereby facilitating the healing without apparent contracting cicatrices and without causing functional disability. Any paraffin wax which is neutral and has sufficient elasticity and ductility so as not to crack after it is applied, will give good results.

PHYSICAL PROPERTIES OF PARAFFIN WAX.

Ambrine is a neutral paraffin and resin compound, which is prepared according to a secret formula. On account of its organic composition, it is impossible to analyze. The wax should be neutral and non-irritating. Paraffin ordinarily contains a trace of sulphuric acid; beeswax contains 12 to 15 per cent. cerotic acid and resin contains 10 to 20 per cent. various organic acids. These acids should be removed so that the base paraffin wax is neutral. The proportion of materials entering into the combination should be such as to insure a low melting, adhesive, non-brittle, elastic, ductile wax. The wax if properly made is a refined pharmaceutical product and not a mere mixture of paraffins. To the wax base, resorcin, oil of eucalyptus, beta naphthol, can be added in proper amounts. Several different kinds of wax should be available; basic wax containing resorcin and eucalyptus, can be used to advantage.

Ambrine is a very excellent neutral wax having ideal physical properties. Its value can be improved by adding any of the above mentioned drugs.

METHOD OF APPLICATION.

Equipment. Fine varnish brush, or preferably a paraffin base atomizer; 1 double boiler; 1 electric drier; absorbent cotton divided into very thin layers.

When the patient enters the hospital, the clothing is removed, blebs are punctured, but not excised; and the entire area is thoroughly dried with a Shelton electric hot air drier, or a Hamilton-Beach fan, so that there is no

moisture on the surface (an electric fan or common fan may be used). The wax is applied to the burn at the earliest possible opportunity, either with a fine varnish brush or atomizer; preferably with an atomizer. It is difficult to regulate the temperature where the brush is used; it is more or less painful, and there is a tendency to brush away and traumatize the new epithelium and granulations. If a brush is used, the wax should be gently daubed on without pressing; to and fro painting movements are painful and should never be used. The frequent changing of brushes is also an objection. The wax can be sprayed on with an atomizer without pain or discomfort; can be evenly distributed at a given temperature, with no possibility of burning.

The atomizer is double jacketed, a water jacket keeping the wax liquid for thirty minutes after it has been thoroughly heated, and may be operated either with a hand bulb, a compressed air pump, or air tank. The wax is placed in the atomizer and it in turn can be placed either in an autoclave, sterilizer, or on a hot plate. Usually 10 minutes boiling is sufficient to bring the wax to a proper liquid state. Where a double boiler is used, the wax can be boiled for ten minutes. One must be extremely careful to prevent the splashing of water into the wax. A properly prepared wax free from water, can be applied directly to a burn or granulating tissue at 150° F., without danger of pain or burning. If the wax comes in contact with water, it is more or less uncomfortable to the patient and the wax does not adhere to the granulations as tightly.

REDRESSING.

For the first two or three weeks, or until the granulating area shows a minimum of wound secretion, the dressings should be changed every 24 hours, because in the early stages of the wound there is a rapid sloughing and separation of the tissue, and a large amount of lymph which collects under the shell. This seropurulent liquid gently lifts the wax from the wound so that it does not adhere to the tissues and frequently drains from under the edges of the dressing. The wax shell is readily removed without pain by lifting it from the edges or by making an incision with scissors through the shell and then gently peeling off the shell. The shell slips off very readily. The wound will be found to be freely bathed with lymph and a purulent secretion, and in the early stages, there are sloughing masses which at times become very offensive. This odour is no contra-indication to the continuation of the treatment. The wound is then gently cleansed with a mild antiseptic solution (saline or boric acid solution), great care being taken so as not to disturb the fine film of epithelium which rapidly starts to grow from the edges of the sound skin. Cotton balls can be used to wipe away the secretion. A more desirable method is to use an atomizer to cleanse the wound.

The entire wound is then thoroughly dried, the granulations taking on a smooth, varnished appearance, and the wax is applied as in the primary dressing. At times, the granulations continue to weep in spite of the efforts to dry. This excess of moisture can be removed with blotting paper. The dressing is then completed as previously described. The odour at times in severe burns is rather nauseating. Where there is a large surface, third and fourth degree burns, with extensive sloughing and absorption of toxins, it is best to apply the Carrel-Dakin or dichloramide T method to reduce the toxæmia and absorption; after the toxæmia has subsided, the wax can be again used. One must change the treatment from time to time depending upon the pathological condition of the wound and clinical condition of the patient.

PRACTICAL FEATURES IN DRESSING AND RECOMMENDATIONS.

(a) At the first dressing, burns should not be scrubbed with antiseptic solutions. The tissues are sterile as a result of the burning and nothing is to be gained by further traumatizing the tissues. Apply the wax at once, merely sponging will not sterilize the wounds if they are infected, regardless of the antiseptic solution used.

(b) Strong antiseptic solutions should not be used in cleaning the burn or granulating tissue at dressing; they should be comparatively weak. The strong antiseptic solutions tend to retard repair. Saline, boric, chlorazene, flavine, brilliant green, or chloramine, can be used in weak solution (preferably in an atomizer.)

(c) The instructions should be carefully followed. Absorbent cotton should never be applied directly to the burn or wound, as it tends to adhere and stick, causing a burning sensation which is very uncomfortable to the patient. The wax applied alone is a soothing and comfortable dressing.

(d) The fetid odour and grey appearance of the wound when the shell is removed should not cause any undue anxiety. After the seropurulent fluid has been washed away and the sloughing tissues separate, granulations with rapid proliferation of epithelium take place.

(e) It is impossible to burn the patient when the atomizer is used. The wax should not be applied at a temperature over 150° F. where the brush is used.

(f) In third and fourth degree burns with great loss of tissue, granulations should be sterilized with Carrel-Dakin method and skin grafted at the earliest possible opportunity. Grafting is not necessary unless there has been very extensive destruction of tissue.

(g) The application of the heated wax encourages the flow of lymph, protects the capillaries and granulation tissue from trauma which is favourable to rapid repair.—*S. G. & Obstetrics.*

Remedies and Preventives Against Mosquitoes.

In the *Review of Applied Entomology* (April, 1918): the subject of the remedies for and preventives against mosquitoes is dealt with by L. O. Howard. It is stated that protection from the bites of mosquitoes may be obtained by the use of various protective liquids, of which a few drops may be rubbed on the face and hands or sprinkled on the pillow at night. Most of those in common use volatilize readily, so that their effect does not last right through the night, and to enhance their value certain mixtures are recommended, of which the most efficacious are (a) oil of citronella 1 part, spirits of camphor 1 part and oil of cedar 0.5 part; (b) castor oil, alcohol and oil of lavender in equal proportions. Of the various smudges and fumigants, pyrethrum powders are very effective when fresh and pure, and are most economically used by moistening and moulding them into small cones, which, when dry, burn readily if lighted at the apex. Equal parts by weight of carbolic acid crystals and gum camphor form a good fumigant. The acid crystals are melted over a gentle heat and poured slowly over the gum, forming a clear, rather volatile liquid, of which 1 c.cm. volatilized over a lamp will very effectively treat every 1,000,000 c.cm. of room space. The screening of houses, using netting for beds, the wearing of veils and gloves after nightfall are obvious necessities in badly infested regions. The abolition of breeding places by drainage measures, or by oiling the water surface with common kerosene, is a necessity.—*M. J. of Australia.*

OBSTETRICS AND GYNÆCOLOGY.

Cæsarean Section (Abdominal) in Transverse Presentation.

By

A. KRAKOWSKY, M. D.,

Renmark, South Australia.

On October 7, 1918, a midwife sent for me to attend a woman, aged 40 years, a multipara, who had been in labour for an hour or more.

Previous History.—The woman had had three previous confinements. Forceps had been used in two of the labours, 22 and 20 years ago, and, as she expressed it, she had had "a bad time." The third child was born eleven years ago without instrumental aid.

Present Condition.—I found the patient semi-conscious and exhausted, with signs of eclampsia. An external examination revealed a full-time pregnancy. The long axis of the uterus was placed in the transverse diameter, the hard, resisting head was felt in the right iliac fossa and the breech in the left.

The membranes protruded as a narrow pouch. They had ruptured a short time previously, and the *liquor amnii* was escaping. The presenting part was placed very high up. I could not determine what it was until the patient was anaesthetized with chloroform. I was then able to make out the acromion spine of the scapula and a fold of the axilla. From the direction it was clear that the position was dorso anterior.

As the shoulder was jammed in the pelvis and the foetus was firmly fixed, I could not expect either a spontaneous version or evolution of the head or breech, as happens in some cases. It was impossible to alter the position of the foetus, either by external manipulation, bipolar method or podalic version. I tried all of these. I therefore decided to remove her at once to the Renmark Hospital. Instead of losing further time in attempting decapitation, embryotomy or other impracticable procedures, I decided to deliver by abdominal Cæsarean section.

The patient was prepared in the ordinary way, and was anaesthetized with ether. I made the usual incision in the *linea alba*, from 1.25 cm. below the umbilicus downwards for about 11 cm. A similar opening was made in the peritoneum. The uterus was then lifted out of the abdominal cavity. An incision about 10 cm. in length was then made in the uterus, and I was then able to remove a fully-developed, dead foetus by the legs. There was some difficulty in getting the remainder of the foetus out of the uterus. Finally it and the placenta were delivered. Unfortunately, hæmorrhage from the uterine vessels and sinuses occurred; this was successfully arrested. The uterine wound was closed with silk sutures passing through the serous and muscular coats, just escaping the mucous membrane. An additional layer was employed more superficially. In all, sixteen sutures were inserted. The peritoneal cavity was well swabbed and the peritoneum and abdominal wall closed in the usual way.

I removed the sutures after six days. The patient felt well all the time. Her temperature never rose above normal. The pulse-rate, however, was rapid. There was a large amount of albumin in the urine. This cleared up after she was given citrate of potash (3.6 grammes) and infusion of digitalis (7.2 mils) four times a day. I allowed her to sit up in bed on the eleventh day, and she felt quite well. After five weeks she was discharged, and was in perfect health when she left the hospital.

THE ANTISEPTIC

MARCH, 1919.

The Insect Pests and the War.

DURING the recent War, the insect pests constituted a danger as great as the enemy himself, and a danger against which the most vigilance was required. Only by scientific work of the most advanced kind could that danger be met. The scientist was every whit as important to the army as its discipline, its munitions of war, or its commissariat. Of the insects which proved a great menace in the war, may be mentioned the mosquito, the house fly, the flea, the tsetse fly and the louse.

It was urged by both military and civil authorities that the domestic fly was a public danger of the first magnitude, not only to the armies in the field, but also to the people at home. The Army medical authorities took early action and instituted a course of instruction in fly prevention for all medical officers whose duty it then was to act as centres of information and instruction for the men. The medical officers were taught that the chief hope of controlling this insect pest lay in abolishing its breeding places, in other words in strict cleanliness about camps and billets, in the destruction of refuse in incinerators, the burying deeply of refuse which could not be burnt and the treatment of all danger spots so as to insure that the young flies should not be able to reach the surface of the ground. These measures were carried out with the greatest care and energy and there can be no doubt that their adoption was an inestimable boon to the troops on the Western front and in the Eastern theatres.

Much more deadly and dangerous than the fly was the mosquito. The part that mosquitoes played in the War was evident from the severe outbreak of Malaria on the Salonika front in the year 1916. But this bad beginning was destined to be the prelude to a very remarkable campaign in preventive medicine—a campaign the success of which seemed problematical at the outside but which nevertheless achieved a notable triumph. The Army Medical Corps made a great effort to clean the malaria-infested country; it reduced the breeding

places of the Anopheles in a most remarkable way; carried out valuable schemes of sanitation and brought down the high incidence of Malaria among the troops to a figure which was certainly not anticipated in earlier days.

Not less menacing than the mosquitoes to the success of the allied armies were the rat-fleas. Bubonic plague had for centuries been the chief enemy of armies, as the history of older wars clearly proves. Its infectious character rendered it not only deadly but demoralising. As it is well known the method of preventing plague lay either in destroying rats or in destroying the fleas. The latter course was not possible, for the rat-flea is at no period of its existence easily attacked on a great scale. Fleas like flies pass through a larval stage, but the grub is deposited in dry earth or other suitable location and cannot be got at. The only method, then, of attacking plague was to control the migration of rats, to destroy as many of these as possible and to segregate all persons affected with the disease. The medical authorities in India, at the European ports, and in control of the health of the armies, co-operated to act as a detective force against this most deadly enemy. The utmost care was taken to ensure that no case of plague was shipped. Inspectors were charged with the duty of looking out for signs of infection among rats and efforts were made to kill rats wherever possible. The areas visited by the disease were rapidly placed under surveillance. When the immense difficulties of the early years of war are taken into consideration it will be evident that this silent warfare against rat-flea and plague constitutes a great triumph of medical and sanitary science.

Next comes the tsetse fly which proved a great menace to the armies in the East African campaigns. The disease caused by the bite of this fly, though not a menace to human life, constituted in a true sense a threat to the soldier and a pest of war by reason of its effects upon transport animals and animals employed to draw guns and other weapons. Like the flea, the tsetse fly breeds here and there, and its breeding places could not be dealt with on any considerable scale to combat the disease it causes. Investigations were therefore begun into the state of the large fauna of the "fly" districts. These investigations rapidly showed that the big game was in fact infected by the trypanosomes of tsetse fly disease and that it acted as a reservoir of these germs. So campaign against the big games in the area infected with the disease and indirectly against the tsetse fly was begun.

Lice which abounded luxuriously in trenches and dug outs in this war was responsible to a new disease called trench fever, which is familiar to our readers. As in the case of malaria and plague, then, the

essential links in the chain of trench fever were discovered. They consisted of the human reservoirs of the disease, the lice, which became infected from these reservoirs, and the excreta of the lice, capable of being blown about by the wind and of finding lodgments in garments, bedding and other material. The difficulty of dealing with the excreta of lice was also great, though means were being sought for to obviate this. The real battle was with the lice. To destroy lice, however, in the middle of a great campaign, was admittedly no easy operation, as the attention of all was fully occupied with the military situation. In these circumstances some more immediate method of handling the situation seemed to be called for. A hint in this direction that possibly offered hope was furnished by the Hampstead researches. If the men could be prevented from scratching the skin, and so inoculating themselves with the poisonous and ubiquitous lice excreta, a sensible diminution in the number of cases of trench fever might be expected. In this great war, efficient bathing facilities and disinfection of infected clothes were sufficiently provided and all these tended to the banishing of lice and so to the lightening of the threat of louse-born epidemics.

Business Notices.

The Editor's Office is at RAMABHAVAN, Poonamallee
High Road, MADRAS.

The Manager's Office is at 323, Thambu Chetty St.
Georgetown, Madras.

All literary communications and books for review should be sent
direct to the Editor.

All business communications and payments should be addressed to the Manager.

*Advertisement Rates per page per month Rs. 7-8 or 10 s.,
Half page Rs. 4-8 or 6 s., a month.*

The subscription for the Journal is Rs. 5 a year, payable strictly
in advance.

Subscribers will be taken on at any period of the current year.

THE ANTISEPTIC.

Vol. XVI.]

APRIL 1919.

No. 4.
Annual Subscription Rs 5.

Original Articles.

THE VALUE OF HEXAMETHYLENE-TETRAMINE PROCTOCLYSIS AS A POST-OPERATIVE MEASURE.

BY

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HE use of hexamethylene-tetramine after major operations has been my practice for many years and its physiological effects have been demonstrated by its action on certain organs. Many physicians recommend it as a valuable antiseptic for the genito-urinary system, but aside from this use, its therapeutic value had been somewhat limited.

Experimental and clinical studies in recent years have taught us that it is indicated not only for diseases of the uro-genital tract, but that it has a specific action on the cerebro-spinal system, the mucous membranes of the nose, throat, and the bronchial tubes and on the alimentary canal.

Flexner has demonstrated that the terrific damage produced in the anterior horns in acute anterior poliomyelitis often is prevented if hexamethylene-tetramine is used in the early hours of this disease. This is vitally important as we are well aware of the paralyses that usually occur with this serious infection.

The rhinologist uses this drug in the every day nose and throat conditions and the internist has recently added it to his armamentarium for combating pneumonia.

In searching the literature on post-operative treatment I find that practically nothing of importance is mentioned of the therapeutic value of hexamethylene-tetramine after abdominal operations. It is an established fact that after some abdominal operations, certain toxins have a tendency to attack the excretory organs. These toxins sometimes tend to inhibit the function of the kidneys and intestines, producing an auto-intoxication which manifests itself in the form of kidney insufficiency or acute intestinal stasis. The toxemia is the result of the action of numerous infectious agents which have gained entrance into the system through various channels. To offset the damage that is produced by these invading bacteria after operation, it seems perfectly rational to administer an antiseptic substance that acts on the genito-urinary tract and the alimentary canal.

For a long time it became somewhat of a routine measure for me to order for my post-operative cases the following solution by mouth:—

R.—

Hexamethylene-tetramine grs. x

Aquae destillatæ O s/s

M. et Sig:—

ʒi q. half hour.

This treatment was begun as soon as vomiting ceased and it proved to be a valuable measure after abdominal operations. Catheterization was rarely necessary, thirst was greatly relieved, abdominal distention seldom occurred and it acted as a prophylactic to post-operative intestinal stasis. The only disadvantage of this method was that the solution could not be administered by mouth in cases of persistent post-operative vomiting or when there was unconsciousness. Now I have the solution given by rectum, using the same principle that is practised in administering the Murphy drip.

To render hexamethylene-tetramine effective, it is advisable to add to the solution acid soda phosphate or some other acid medium. Eight ounces of the combined solution may be administered three or four times daily.

The Murphy drip frequently acts as a life saver in the presence of hemorrhages and when the system has been drained of considerable fluid. Clinical experience with saline proctoclysis has convinced us that the bowels are capable of absorbing immense quantities of fluids which help to restore blood pressure, favor the dilution and elimination of toxins, promote peristalsis, relieve gaseous distention and produce a stimulating action on the heart and circulation.

Saline proctoclysis is sometimes irritating when given in large quantities and numerous observers claim that it interferes with the function of the kidneys on account of the excessive amount of chlorides that are absorbed by the system.

Hexamethylene-tetramine proctoclysis has an advantage over saline solution in that it has the additional properties of a urinary disinfectant and an antiseptic of the alimentary canal including the gall bladder and bile passages.

In discussion of Charles H. Mayo's paper on the Etiology, Symptoms and Treatment of Gall Bladder Disease before the Bronx County Medical Society in January 1916, I attempted to emphasize the importance of hexamethylene-tetramine proctoclysis as a post-operative measure following cholecystectomy and cholecystostomy.

Bacterial infection should be considered one of the prime factors in the etiology of diseases of the gall bladder and biliary passages. Inasmuch as constipation is more prevalent in women, this condition would be an important factor in loading upon the liver a great number of bacteria which have ascended from the colon or have migrated to the liver by way of the portal circulation. This probably explains the prevalence of gall bladder disease in women.

Cholelithiasis should be considered one of the end results of biliary infection and when we drain or remove the gall bladder because of stones, it does not necessarily mean that the underlying cause of this condition is removed. To effect a complete cure, we should endeavour to treat the primary source of the infection, and we therefore should attempt to destroy the bacteria and their toxins. This can be accomplished by administering a therapeutic agent that acts directly on the alimentary tract.—*A. J. of Surgery.*

SOME CAUSES OF KIDNEY PAIN AND THEIR TREATMENT (EXCLUSIVE OF STONE, TUBERCULOSIS AND INFECTION.)

BY

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Kidney pain is one of the commonest complaints with which the urologist is confronted. The pain may be localized in the loin or abdomen, or radiate widely. It is frequently quite a simple matter to say definitely that a patient is suffering from renal colic or renal pain. Quite otherwise, however, in many cases is it to locate the cause. The X-ray picture alone will suffice in a minority of the cases. Urinalysis frequently yields no clue. Only too often these cases are allowed to drag on, month after month, in the

absence of immediate apparent urgency, until the kidney passes beyond the stage where conservatism offers any chance of repair. In the words of a recent writer :

"Detection of a secondary pyonephrosis or of a giant terminal hydronephrosis requires no particular diagnostic acumen, and certainly these conditions, when met, are diligently enough attacked. To the master urinary mechanic, however, something more than this is desirable. Prevention of these conditions is worth vastly more than their cure, and this accomplishment in the vast majority of cases is definitely and persistently associated with the recognition and early relief of ureter obstruction. Perhaps of even greater importance, from the view-point of the patient, is the possibility of obtaining relief from those years of suffering and ineffective intra-abdominal exploratory excursions which intervene between the time the true, but hidden, pathology begins and the time it reaches such vast proportions as to speak unequivocally for itself."

It is with this interim that we are immediately concerned. My object here is to emphasize most strongly the significance of chronic obstruction of the ureter as a thing of itself, to be treated with the respect its symptom-producing powers demand, to be deliberately sought in possible explanation of certain perplexing clinical pictures, and to be promptly remedied by means often quite simple, but quite effective.

With this object in view, the case-records of 170 patients suffering with renal pain, taken alphabetically from my case books of the past four years, have been carefully gone over. Renal conditions incidental to pregnancy have been excluded, as they have been dealt with at length in previous communications.

Of the 170 patients, 52 had renal or ureteral calculi and 18 had renal tuberculosis. This leaves 100 cases to be otherwise accounted for. In other words, of 170 unselected patients suffering with renal pain, only 52, that is, about 30%, had stones as the causal factor; 18, or about 10%, had renal tuberculosis; 100, or about 59%, had other causes for their renal pain. Of these 100 patients, 32 had gross, suppurative lesions, and are excluded from present consideration. This leaves 68 patients with renal pain, but without any gross infection, in whom the nature of the lesion was not immediately apparent.

So far as general physical signs and symptoms are concerned, these were more or less similar in all cases, and were not pathognomonic. There might be more or less constant, dull ache in the back or elsewhere, or recurrent colicky attacks of greater or lesser severity, of any or no radiation. Associated bladder disturbance might be conspicuous or absent. Gastro-intestinal disturbance may be an outstanding feature. The urinalysis was often negative. In the early cases the kidney was not palpably enlarged and in the

intervals between attacks, as a rule, not markedly tender. Attacks might coincide with the onset of menstruation. Appendicitis, cholecystitis, salpingitis, gastric ulcer, intestinal obstruction, lumbago, sacro-iliac disease and numerous other maladies were often more or less accurately simulated. Previous futile abdominal operations had been performed in 15, i.e., 22% of the 68 cases.

The cases group themselves broadly into two general classes: (1) those due to lesions primarily within the kidney or ureter—intrinsic causes of renal pain; (2) those due primarily to causes outside the kidney and ureter and causing obstruction of the ureter—extrinsic cause of renal pain.

In the first group are included strictures of the ureter and renal neoplasms. In the second group ureteral obstructions by aberrant blood vessels and fascial bands, intermittent obstructions of the ureter and partial strangulations from torsion of the vascular pedicle in cases of movable kidney, ureteral obstructions from tumours in the abdomen and pelvis, from inflammations of the seminal vesicles, from growths in the bladder and *cervix uteri*, and from certain inflammatory conditions of the broad ligaments and vermiform appendix.

It would be impossible in the limited time at my disposal to enter even briefly into details of all of these various cases. It must suffice, therefore, to deal generally with the more important classes as a whole and to describe in some detail those cases that illustrate some of the more important technical considerations.

Intrinsic Causes of Renal Pain.

(1) Stricture of the Ureter.

This may be primary or secondary, congenital or acquired. Congenital strictures, in my experience, are extremely rare, though there happened to be three in the present series of cases. Secondary strictures following the passage of ureteral calculi or their operative removal are by no means uncommon. Strictures associated with renal tuberculosis and other infections are very common, but are not considered here. It is frequently a matter of impossibility in any given case to trace the ætiology of the ureteral stricture.

Gonorrhœa and syphilis probably figure prominently as ætiological factors. Some authors ascribe importance to distant focal infections, *e. g.*, in the tonsils, teeth, intestinal tract, etc. Certainly many cases clear up much more rapidly when such associated conditions receive adequate concurrent attention.

The cause of pain in all these cases is definitely associated with increased intra pelvic pressure. This increase may be constant or intermittent, depending on the extent and character of the obstruction. The pain, as one

would expect, may also be constant or intermittent. It may, as stated above, be mild or severe, of any location within the abdomen or lumbo-sacral regions. It may be fixed or of any radiation. It may more or less accurately imitate almost any abdominal organic lesion. Whatever its nature, the fact of its dependence on increased pressure within the renal pelvis permits of its accurate reproduction to any degree necessary for diagnostic purposes. A valuable test is thus afforded. It is known as the pain reproduction or over-distension test. It is performed by carefully injecting a coloured fluid through a ureteral catheter into the renal pelvis or ureter until the patient complains of discomfort or even pain. Intelligent patients will commonly at once announce either a return or an aggravation of the existing pain, if of urinary origin, or a variation in its site and character, if due to some extra-urinary cause. The pain subsides immediately following removal of the fluid. This test I have found of great diagnostic value in certain cases.

Increased pelvic pressure sooner or later leads to increased pelvic capacity from dilatation of the pelvis or ureter above the stricture. This dilatation should always be looked for. In the earliest cases, however, it may occasionally be absent, and its presence is not necessary for a correct diagnosis. It must always be borne in mind, therefore, that an early stricture of the ureter may exist and cause definite symptoms from raised intra-pelvic pressure, without any evidence of dilatation of the renal pelvis.

The stricture may be located anywhere from the uretero-pelvic junction to the uretero-vesical orifice, though the lowest 15 cm. of the ureter is the most common site. Where the stricture is low down in the ureter the ureter dilates first, and the renal dilatation, when present, is commonly at the expense of the calices, the pelvis being only secondarily involved. When the stricture is close up to the kidney the renal pelvis itself is commonly the seat of the primary and maximum dilatation. In the former case the whole kidney is eventually converted into a sac; in the latter the renal pelvis may become enormously dilated, the hollowed out kidney lying as a cap upon its outer surface.

In the early stages, before any palpable enlargement of the kidney has taken place, complete cystoscopic and X ray (*i.e.*, pyelographic) examination will definitely establish the diagnosis. In cases of stenosis of the vesical termination of the ureter a cystic projection into the bladder is sometimes seen. In other cases the ureteral catheter (with a wax bulb, if desired) may detect some ureteral obstruction. Often a sharp exclamation of pain will be elicited as the catheter tip or bulb impinges on the site of the stricture. Generally there will be found some increase in the pelvic capacity, a pain reproduction test which is positive, and perhaps some defect of the excretory capacity of the kidney, as shown by lowered specific gravity of the urine (as compared with the opposite kidney), subnormal excretion of urea,

indigo carmine or phthalein. Turbidity of the urine from the affected side will sometimes be found, due not to pus, but to the presence of large masses of epithelial cells. The pyelogram, after injection of an opaque fluid, will reveal the site of obstruction and the extent of dilatation, if any.

When infection occurs, as it is bound to do, sooner or later, the clinical picture naturally varies with its degree and with the extent of the existing dilatation. If attention is now directed solely to the infection, the obstructive element being overlooked, any method of treatment, however diligent, will naturally be ineffectual. The futility of treating such cases by vaccines alone should be sufficiently apparent. Yet such patients are constantly presenting themselves, either with or without radiographic reports, which are "negative for stone," and on examination *bacillus coli communis* and pus are discovered in the urine. These patients have often been treated without benefit, at times for months, by injections of vaccines and perhaps bladder irrigations, without any attempt having been made to establish any other diagnosis than that of *bacillus coli communis* infection.

Treatment.—Before infection takes place these cases are generally amenable to ureteral dilatation by means of the cystoscope and ureteral catheter. In other cases retrograde dilatation (the pelvis or ureter being opened above the stricture), uretero-vesical transplantation or even plastic operations on the ureter, may be required. Failing these, resort must be had to nephrectomy. In the case of cystic prolapse of the lower end of the ureter, the ureteral orifice may be slit up through the cystoscope with the high frequency current or the cystoscopic operating scissors. When infection has supervened, ureteral dilatation and medication of the renal pelvis, often with the aid of a retained catheter, and perhaps autogenous vaccination and adequate oral therapy will sometimes bring complete relief. Too often, however, such cases have passed beyond the stage where conservatism offers any hope of cure, and nephrectomy remains as the sole resort.

(2) Renal Tumour.

Renal tumour, when large, requires no great diagnostic acumen. When smaller or growing upwards from the upper pole of the kidney, especially in a fat individual, the diagnosis may be very difficult. Pyelography, by showing characteristic deformities in the outlines of the calices and pelvis, will frequently establish an otherwise doubtful diagnosis. This forms a most important and illuminating chapter in the diagnosis of renal conditions. Time, however, precludes its further consideration here.

Extrinsic Causes of Renal Pain.

(1) Obstruction of Ureter and Uretero-Pelvic Junction by Aberrant Vessels, Fascial Bands, etc.

This condition is one of considerable importance, and varies in frequency with ureteral stricture as a cause of often unrecognized renal pain. Its

symptomatology is practically identical with that of ureteral stricture. Differentiation of the two conditions may be made by pyelography in nearly all cases. This condition may be, and quite often is, associated with movable kidney, and will be further considered in this connexion.

(2) Movable Kidney.

Though this is a very common finding in a general abdominal examination, it has no surgical significance in the vast majority of cases.

Examination of a large number of these cases proves conclusively, to my mind, that true renal pain is rarely present in this condition without evidence of dilatation of the renal pelvis in the affected, as compared with the opposite, side. During the migration of a mobile kidney, partial strangulation may occur through torsion of the pedicle and be the cause of violent pain and sometimes hæmaturia, with or without dilatation of the renal pelvis. The pain reproduction test (*vide supra*) in such cases is, however, positive. When the upper part of the ureter is fixed by inflammatory adhesions, or when anomalous vessels are present, a very slight grade of mobility is apt to lead to kinking of the ureter, with resultant retention and dilatation. This produces an intermittent type of hydronephrosis, often going on for years before gross hydronephrosis develops. When, however, such a kidney becomes fixed in its malposition, as not infrequently happens, the ureteral distortion becomes permanent, unless relieved by operation, and the progress of the hydronephrotic process is limited only by the degree of collateral circulation and extent of permeability of the ureteral lumen.

Kinking of the ureter and strangulation of the vascular pedicle may lead also to various interstitial or parenchymatous changes in the kidney, due to the chronic passive congestion. Such kidneys are commonly large and flabby and more or less adherent, owing to inflammatory reaction. Occasionally they are smaller than normal. A varicose condition of the vessels running along the upper part of the ureter into the kidney is a not uncommon finding in these cases. I have seen no mention of this in the literature, and am unaware of its significance, but think it wise to tie and divide them when they are found, as in a varicocele operation. It should be noted that maximum degrees of renal mobility are frequently unassociated with pain, and are of no necessary pathological significance. When both kidneys are victims of the hydronephrotic process, as not infrequently happens, it is generally best to fix both at one sitting, the patient lying prone on the table with a sandbag under the abdomen.

As stated above, when operating for these conditions, it is essential to look for other causes of ureteral obstruction than mere mobility of the kidney as quite frequently the actual obstruction is due to uretero-pelvic or uretero-ureteral adhesions, anomalous blood-vessels and the like. The neglect to

recognize and rectify these conditions is, apart from unsuitable selection of cases, in my opinion, the commonest cause of failure after nephropexy.

Associated lesions will not uncommonly require attention at the same time, in order to obtain the best results, especially noteworthy, perhaps, being appendicitis, cholelithiasis and retroversion and prolapse of the uterus. When surgical interference is necessary, the gall-bladder can generally be drained and the appendix removed through the ordinary nephropexy incision. A surgeon of reasonable dexterity will have little difficulty, as a rule, in completing all necessary surgical steps at one sitting.

Splanchnoptosis is sometimes associated with renal crises due to renal mobility, and will require appropriate remedial measures after nephropexy, viz., abdominal support, massage, electricity, etc., if the best results are to be obtained. There is, in fact, no condition with which I am acquainted that will better repay careful operative selection, careful pre-operative general abdominal examination and careful post-operative treatment, when indicated. It should not be understood that I am even remotely suggesting systematic surgical attack in cases of movable kidney. Nevertheless, indiscriminate contempt for renal mobility is a serious error. In a certain minority of the cases, as stated above, the condition is definitely pathological, and when these are investigated in accordance with the principles above enumerated, operation is not only permissible, but essential to the patient's future well-being.

For my own guidance in these cases I have made it a general rule not to operate unless one or more of the following conditions obtain:—(1) Dilatation of the renal pelvis, as measured by the ureteral catheter, and in doubtful cases demonstrated by pyelography; (2) a "pain reproduction" test which is positive; (3) deficient excretory capacity of the kidney in question for indigo-carmin (or phthalein) or urea; (4) a kidney that is painful and tender, either more or less constantly or during or immediately after an attack of pain.

The operative technique employed may be briefly described as follows: Complete delivery of the kidney through a lumbar incision; exposure of the upper ureter and uretero-pelvic junction; division of any anomalous vessels or adventitious fibrous bands, causing kinking of the ureter or uretero-pelvic junction; baring of the posterior surface of the kidney down to its fibrous capsule; three superficial triangular sutures of No. 5 plain catgut, one in the upper, one in the lower pole and one in the centre of the bared surface; removal of fat from the surface of the *quadratus lumborum* muscle; bared surface of the kidney painted with tincture of iodine; oblique fixation of the kidney to the anterior surface of the *quadratus* muscle, the uppermost suture passing above the twelfth, or, if short, the eleventh, rib, the other two through the *quadratus lumborum* muscle; capsular occlusion, i.e., suture of the anterior to the posterior layer of the peritoneal fascia below the kidney,

thus forming a sling for the lower pole of the kidney to rest upon; suture of the wound in layers without drainage. When any intra-peritoneal excision is to be performed, the peritoneum is opened outside the ascending (or descending) colon and the necessary steps completed prior to the insertion of the kidney sutures.

(3) *Ureteral Obstruction from Tumours in the Abdomen and Pelvis (e.g., Uterine Fibroids, Cancer of the Cervix Uteri, etc.).*

These are by no means uncommon causes of renal pain. In such cases, provided the renal function is sufficiently good to permit of operation, attention should, in the first instance, be directed to the tumour. Removal of this may also remove the ureteral obstruction. Otherwise, this will later require its appropriate treatment, which will be the same as that described above under ureteral stricture.

In some cases of cancer of the cervix the ureter is involved in the growth. Such cases are generally inoperable, but may occasionally be treated by resection of the involved segment and transplantation of the proximal end into the bladder during the course of the radical operation for removal of the growth, or, if necessary, by knotting the proximal portion of the ureter after ligation of its extremity.

Renal pain following operation for the abovementioned conditions may be due to stricture of the ureter or total occlusion by ligature. The latter, if unrecognized, may go on to hydronephrosis or pyonephrosis, or may proceed to symptomless renal atrophy. In such cases the local condition will determine the necessary treatment. These complications are, I think, much more frequent than is generally believed, the urinary factor in the case being quite commonly overlooked.

(4) *Certain Bladder Lesions, e.g., Benign and Malignant Growths, Diverticula, etc.*

Diverticula of the bladder are liable to cause renal pain by compression of the lower end of the ureter, with resultant hydronephrosis. Treatment is by excision of the diverticulum. Benign papillomata sometimes present themselves with albuminuria, renal pain and intermittent hæmaturia, thus suggesting a renal lesion. I have seen several such cases, in some of which there was no apparent involvement of the ureter. In all, the symptoms disappeared following destruction of the tumours by high frequency cauterization through the cystoscope.

Quite otherwise is it, however, with bald, infiltrating, malignant growths of the bladder, which quite often involve the ureteral orifices and cause severe renal pain. Here extensive resections, with ureteral transplantation, or total cystectomy, alone offers hope of cure. Quite recently there was referred to me a patient suffering from right renal colic, demanding the

free and frequent use of morphia. X-ray examination had on two separate occasions proved negative, and exploratory operation on the right kidney had been advised. Cystoscopic examination showed that the pain was due to a most extensive malignant growth of the bladder, involving the right ureteral meatus and trigone.

(5) *Seminal Vesiculitis.*

Seminal vesiculitis or inflammation of the seminal vesicles is a troublesome and often overlooked cause of renal pain. If one bears in mind the proximity of the vesical end of the ureter to the seminal vesicles, it will be a cause for wonder that the ureter is not more often involved by inflammatory conditions of the vesicles than is actually the case. There may, too, be true vesicular colic, indistinguishable from renal colic. A patient was referred to me some months ago with a diagnosis of recurrent attacks of renal colic, which had entirely incapacitated him from work, and which had been spread over six years. He brought with him an X-ray photograph of his pelvic area and a covering letter from the radiographer, stating that there were numerous shadows in the region of the lower end of the ureters, one or more of which were probably calculi, while the rest were phleboliths. Pyelography revealed a normal outline of the renal pelvis, the shadows in the pelvic area (phleboliths) being seen to lie outside the line of the ureter. Rectal palpation discovered two large "pus tubes," though there was no history of antecedent gonorrhœa. *Streptococci* and *staphylococci albi* were the infecting organisms. After a prolonged course of rectal massage this man was eventually cured by a bilateral vasotomy and injection of the vesicles with a silver solution. He has since been accepted for active service abroad. Numerous similar cases could be quoted.

(6) *Inflammatory conditions of the Broad Ligaments and of the Appendix.*

These sometimes involve the ureter by direct extension of the inflammatory process. Several years ago I recorded a case of pyonephrosis due to ureteral obstruction from an adherent inflamed appendix. Retrocaecal appendices and acute inflammations of the broad ligaments would seem particularly liable to produce ureteral obstruction by external compression. So far, however, as my experience is concerned, neither of these conditions is nearly as common as might reasonably be supposed. The treatment is to remove first the cause and later, if necessary, the resulting ureteral stricture.

(7) *Obstruction of the Urethra by Stricture, Prostatic Hypertrophy, Median Bar Formation.*

Occasionally in such cases the outstanding feature from the patient's view-point is a more or less constant, dull or sometimes severe pain in one or other kidney region. This is due to the progressive dilatation of the kidney and ureter resulting from the increased back pressure. It usually disappears after removal of the urethral obstruction. I have seen quite a number of cases

where a congenitally narrow external urinary meatus was the exciting cause of very troublesome kidney pain, which cleared up entirely after meatotomy. The same applies also to cases of median bar formation and, to a lesser extent, to general prostatic hypertrophy. In the former condition, which is particularly liable to occur in men between 30 and 50 years of age, brilliant results may often be obtained by means of the prostatic punch of Young used through the urethra. Success, of course, is absolutely dependent on accuracy of diagnosis.

In this regard two particularly instructive cases may be quoted in some detail. The first is that of a man, *æt* 65, who was admitted to hospital in a moribund condition, with a history of martyrdom to lumbar pains for a number of years, for which he had never consulted a doctor, though he had frequent recourse to various vaunted quack remedies. He died of uræmia within twelve hours of admission. At the post-mortem examination an enormously hypertrophied and dilated bladder and bilateral hydronephrosis were found. The prostate and vesical orifice were normal. The cause of the obstruction was a congenitally narrow external urinary meatus, through which a fine probe was inserted after some manipulation.

The second case illustrates the difficulties of diagnosis sometimes encountered in these cases. It is that of a man, *æt* 52, suffering with recurrent attacks of left renal pain and hæmaturia, extending over the past four years. He had been examined by means of X-rays elsewhere, and numerous shadows had been found in the region of the bony pelvis, some of which had been diagnosed as ureteral calculi. Their operative removal had been suggested. Cystoscopic examination found a well-marked median bar, the size of a small cherry, and advanced trabeculation of the bladder. A catheter passed to the left kidney without obstruction. The pelvic capacity of the left side was 63 c.cm. Pyelography showed a well-marked hydronephrosis of the lower ureter type. The ureterogram showed the shadows well outside the line of the left ureter. This patient had previously made no complaint of interference with the act of micturition, and rectal examination found no prostatic hypertrophy. Enquiry, however, elicited the fact that, though the stream was generally fairly full, sometimes micturition was interrupted suddenly in the middle of the act, and would start again after a few seconds. The diagnosis was made of urinary obstruction from median bar formation, hypertrophy of the bladder and hydronephrosis due to the increased intravesical pressure. The bar was removed by Young's punch through the urethra, with complete relief of the patient's symptoms.

SUMMARY.

(1) Renal pain is due to the presence of calculi probably in less than one-third of all cases—in 52 of 170 (*i.e.*, 30%) examined.

(2) Exclusive of tuberculosis, stone and gross renal infections, some form of ureteral obstruction is the cause of renal pain in the vast majority of cases.

(3) The diagnosis can and should be made in the early stages, when correct treatment results in a practical *restitutio ad integrum*.

(4) Stricture of the ureter is a common cause of renal pain. For its diagnosis the cystoscope and ureter catheter may suffice. Often, however, pyelography will be necessary to establish the diagnosis.

(5) Movable kidneys should not be subjected to operation unless their causal connexion with the existing pain can be unequivocally established. When such is the case, operation is urgently demanded.

(6) The operation of nephropexy demands not only adequate fixation of the kidney, but also careful exploration of the uretero-pelvic junction and upper ureter for possible anomalous blood vessels, adventitious bands, etc., causing obstruction of the ureter and requiring division.—*M. J. of Australia*.

OUR CONTEMPORARIES. SURGERY.

The Wassermann Reaction.

SIMPLE ASPECTS OF ITS APPLICATION AND RELIABILITY.

Probably no diagnostic test has ever received such world-wide attention or inspired so much rapid research as that originating in the discovery of the Bordet-Gengou phenomenon in 1901, for within five years of that time Wassermann, in conjunction with Neisser and Bruck, had shown that the principle was applicable to the diagnosis of syphilis, and so gave his name to a now famous serological reaction.

Immediate improvements and modifications followed, yet the value of the reaction has repeatedly become surrounded by doubt. Time must always elapse before a busy medical world can come by all the available facts, and so judge the case for itself, but at the moment, when so much is heard and written of venereal disease, its treatment and its effect upon the economy of the nation, we must not turn from a method because in exceptional circumstances it has been known to fail, but rather attempt to blend it with our other available means. Therefore it is the aim in this article to sketch briefly, in relation to the accepted mechanism of venereal treatment, the value of this famous reaction, the principles of its application in a venereal disease clinic, and to indicate some at least of the more important phases in which, as a real aid to diagnosis and control, it reaches its maximum utility.

THE LATEST OFFICIAL PUBLICATION.

This book consists of reports of the Special Committee upon the Standardisation of Pathological Methods No. 4, and is devoted to this one test entirely. It appeared desirable to arrange a definite trial in which a series

of specimens from patients of known clinical history should be examined by skilled observers of recognised experience, using similar fractions of serum in each case, and employing the original Wassermann test with its full controls. Dr. Sequeira, of the London Hospital, offered his co-operation, and selected some hundred cases, both syphilitic and non-syphilitic, of ideal variety and completeness of history, retaining himself all clinical information regarding them. The sera, divided into three equal parts, and labelled only with numbers, were sent to three established experts, namely, Colonel L. W. Harrison, Dr. Carl Browning, and Dr. James McIntosh, each worker employing the full Wassermann technique. Their results show remarkable consistency, both in relation to each other and to the cases already decided as syphilitic, and it will be well to quote the more important of the committee's conclusions.

"Upon the study of all the observations presented in this report, the committee consider that in the hands of those whose previous record entitles them to be considered as experts, the percentage of positive Wassermann reactions in active syphilis is so high that the test may, for all practical purposes, be looked upon as specific. It must not be forgotten that the performance of this test involves one of the most complicated methods that have been applied to diagnosis in medicine, a fact which has already been emphasised by the committee in their former report on its technique. Practised as it has been by all sorts of laboratory workers, it was only to be anticipated that in some instances at least inaccurate or fallacious results should have been obtained. Such failures have in certain quarters led to a scepticism with regard to the results, or even to the value of the method itself. Much of the criticism and scepticism, however, has been based on mere statements, and a searching inquiry into the literature of the last eight years reveals, in the opinion of the committee, really very little that can be classed as proved inaccuracy. There is, indeed, a much greater volume of published evidence in favour of Wassermann test."

CASES MET AT VENEREAL CLINIC.

Broadly speaking they will fall naturally into two main classes. The first comprises those who have realised the nature of their disease unaided, particularly in the primary stage, and those who have been at once diagnosed by the first doctor consulted, who therefore sends them direct to the clinic. The second contains the more obscure conditions decided by other departments to represent either early syphilis with unusual sites or manifestations, or else late syphilis in any of the various conditions which may be found among the out-patients of the physician or the dermatologist. Well developed secondary symptoms may make uncertainty impossible, but with the typical cases and primary conditions efficiency can be marred either by unnecessary speculative treatment or by delay until a definitely possible W. R. is established. When a patient, having few other signs, presents a sore and a

supposed infection period of one to two weeks, it is a fully accepted fact that the W. R. will probably be negative whether the chancre be syphilitic or not; and also, as frequently happens, the person may have been given with every good intention an intra-muscular dose of mercury some days before his arrival at the clinic. This, again, will largely vitiate the test, if not temporarily producing a complete negative. Hence for rapid work we must here give precedence to a more immediate method, namely, the direct recognition of the causal organism in serum from accessible lesions, and this may be done on the spot with a high-power microscope and dark-ground illumination. The spirochaete or *Treponema pallidum* can be observed with considerable certainty. It may not be out of place roughly to indicate one very excellent type of clinic arrangement, consisting of two small communicating apartments opening into the consulting-room. The one is fitted as a dark room with dark-ground microscope adjusted and always ready, the other has water supply, a stock of collecting apparatus to hand, chair and screen accommodation for the patient, and the whole in charge of a skilled assistant who attends throughout the sitting. A person can be immediately ushered into the collecting-room, the lesion cleaned, dried, with a little alcohol, and the exuding serum subjected to microscopic examination. Meanwhile a sample of blood for a later Wassermann test may be taken in the usual way, and is thus obtained before any treatment can have impaired the value of the result. The dark-ground field may give the diagnosis at once, saving many hours, while the W. R. obtained with the whole batch on the next day becomes confirmatory.

LATE SYPHILIS.

Turning next to the later phases of the disease—that is, to the type common among those forwarded from other medical out-patients—we see the W. R. come progressively into greater importance. Instead of being distributed over the whole system, the organism is scarce, and can rarely be detected in any accessible lesion, for the spirochaetes tend to localise themselves scantily in one or more foci, corresponding to which are found the isolated gummata, possibly breaking surface and giving rise to common manifestations on skin, tongue, palate, periosteum, etc., or else remaining invisible but producing symptoms due to enlargement, pressure, or necrosis. One can only touch upon so tremendous a subject as this, but the point must be made that, given even expert medical opinions, there is no doubt that the best deciding test in these instances is the Wassermann reaction.

Taking an average from well-recognised statistics over a number of years, one arrives at a figure of about 89 per cent. positive reaction in all cases accepted as certain tertiary syphilis, while in more recent times (1912) testing 372 cases which, unknown to them, were diagnosed as clinically certain, Fildes and McIntosh obtained at the London Hospital a result of 97 per cent. positive for tertiary lesions.

CONGENITAL CASES.

In dealing with the congenital type all observers agree in finding just as high a positive percentage, but in this instance the medical history of the parents and the familiar stigmata make a very characteristic clinical picture, and such are not the cases where laboratory investigation is all important. It is for the very young baby, of known or suspected syphilitic heredity, but as yet showing no signs of disease, that one cannot overestimate the value of the test. Was the parent infected before or after conception or birth? Is the child the subject of latent syphilis or has it escaped? The test, repeated at intervals, if necessary, can provide information of the greatest worth and give a timely warning which may save the young body from ruin.

PARASYPHILIS.

And, lastly, of parasyphilis, the same statistics show a very high relative percentage indeed, in fact about 80 per cent., but among the remaining 20 per cent., are undoubtedly cases not of syphilitic origin, for these types of chronic action can be very closely simulated by many other causes of slow pathological change. The diagnosis will practically always be made by the physician, while the serologist will be set the task of determining the true cause of the sclerosis, and apart from his own experience of the small points peculiar to the specific variety, the Wassermann reaction must prove his chief claim to decision.

USE IN TREATMENT CONTROL.

The degree, routine, and extent of the recognised courses of treatment have been, of late, so widely and frequently published that it is unnecessary to give details here, but supposing that the needed work has been done and the patient apparently recovered, it must be recalled that there may be some small corner unscavenged, as too frequently proved by an unexpected relapse. The obvious control is the serological test detecting all but the minutest residue, but a great fallacy may arise from the effect of the curative agents incompletely eliminated from the blood-stream. There is no doubt that both mercury and arsenical injections can produce a spurious negative reading, the former being by far the worst offender, and though knowledge of the state of the particular case may allow the pathologist to modify his technique and standardisation to counteract this tendency, yet it is one of the commonest indirect causes of relapse when specimens are sent to a distant laboratory and cure assumed on the strength of a misleading Wassermann test.

Even later, to allow for the possible residual organisms, blood must be taken again at intervals up to six months, and even for certainty up to one year after all treatment has ceased. One is apt to forget that, had we not this means, during that six months or year we should be more than a little in the dark, and it is at this stage that the reaction, when properly applied, may be said to reach its maximum economic utility.

INCIDENCE IN POPULATION.

To come finally to one other general consideration, it may be taken as a well-known fact that there are many undoubted instances of the disease, yet showing no symptoms of syphilis, but in which the W.K. is positive. The examinations of such cases have been utilised to determine the incidence of syphilis in the general population. It is unfortunate that there is a fallacy in that these "populations" were not general but selected,—usually a hospital population—but it is interesting to note that among a large number of patients, visiting London hospitals for reasons wholly unconnected with syphilis, as high a figure as 8 per cent. is given. Regrettably, when we set about collecting specimens generally from both the fit and unfit, the necessary procedure is far from popular with the patients themselves, and so such investigations have had their limitations, but the instance is given as yet another use of the Wassermann reaction in the approaching conflict with venereal disease.—*The Hospital*.

Cancer of the Tongue and Tobacco.

Among the subordinate questions relating to cancer there has appeared every now and again the inquiry whether the disease is or is not an increasing quantity. Taking the official figures of the causes of death the answer to this doubt is decidedly in the affirmative, and many clinical observers, including so experienced a surgeon as the late Sir Jonathan Hutchinson, have expressed a confident conclusion in the same direction. Yet it must be admitted that there has always been some uncertainty whether what appears to be an obvious increase may not perhaps be explained by improved methods of diagnosis.

By microscopic and other methods malignancy is now recognised in conditions where some years ago it would not have been suspected. Hence whether the increase in the deaths attributed to cancer is a real increase or only an apparent one is a question which admits some difference of opinion. The balance is certainly towards the affirmative and this view is strongly favoured by the facts and figures submitted by Mr. D'Arcy Power in his recent Bradshaw lecture on Cancer of the Tongue. According to Mr. Power the disease is hardly mentioned by surgical writers prior to the seventeenth century, and the first recorded case occurred in 1634. What a contrast such a statement presents to present-day experience our professional readers will at once appreciate, and the figures supplied by the Superintendent of Statistics at Somerset House will make the position apparent to all. Writing in 1909 the Superintendent said, "The recorded mortality has increased among

males by no less than 228 per cent. in forty-one years." Here at all events it is impossible to believe that we are dealing with a situation which is a mere expression of more exact diagnosis.

Searching for a cause for this increase of lingual cancer Mr. Power finds that the increase is not associated with any hereditary tendency to carcinoma, and he does not believe that specific disease has more than a predisposing influence. It is necessary, therefore, to find an exciting cause, and this must be an agency which acts on men much more than on women and has become increasingly operative during the last fifty years. Dental caries and pyorrhœa alveolaris can be dismissed as not satisfying either of these two conditions. On the other hand, a strong case can be presented against tobacco. Its use has enormously extended during the past forty years and, at all events until quite recently, the habit was cultivated chiefly by men and not by women. There is a consensus of opinion that local irritation is a large element in the determination of the site of cancer, and tobacco smoking may supply this, partly in the shape of heat and partly in the shape of nicotine. With a predisposition to cancer of the tongue established by specific disease and with an extension of the tobacco habit in both sexes Mr. Power anticipates a still further increase in lingual carcinoma for, so he affirms, specific disease is now more prevalent in the younger generation than it has been for some years, and the cigarette numbers its devotees in wider and wider circles and claims the gentler as well as the sterner sex. —*The Hospital*.

Early Diagnosis of Syphilis.

The Means in the Practitioner's Hands.

One cannot overestimate the importance of a subject affording the earliest means of diagnosis in syphilis, and this at a period when clinically it is otherwise almost impossible to arrive at a definite decision. It is known that treatment in the very early primary stage is relatively simple and assured, whereas after generalisation of the infection and the development of a positive Wassermann reaction it is prolonged, uncertain and a matter of months. For thoroughness one must suspect every localised lesion, however small or atypical, as being of possible spirochaetal origin if on the organs of generation, and, seeing that the most reliable methods of detection are of the simplest nature, it should become a routine practice to examine every such eruption for the organism. There is no excuse for the omission by any organised institution, and even for the practitioner the outlay on apparatus is so small compared with the value of the result that the means may well form part of his equipment. The following details are largely drawn from the report of the Medical Research Committee, but in

their original form they carry differentiation to a stage of such completeness that we may omit some of the finer points and yet outline a thoroughly efficient scheme for the solitary worker.

COLLECTION OF MATERIAL.

It is necessary to examine *uncontaminated fluid freshly expressed from the lesion*. Also care must be taken that previous local antiseptics do not gain access to the specimen, and it must be borne in mind that Salvarsan or its substitutes have an extremely rapid action on the spirochaetes, so that microscopical diagnosis must be made prior to arsenical treatment.

(a) *Superficial Lesions*.—Sore is thoroughly cleansed and dried, squeezed until drops of serum are expressed on the surface, and this drawn by capillary attraction into a small pipette, the end of which has been applied to the fluid. Traces of blood must be avoided, as the corpuscles spoil the microscopic field if present in any quantity.

(b) *Skin Lesions*.—Serum may be obtained by scarifying or the use of a blister and the extraction of fluid from the raw area exposed.

(c) *Lymph Glands*.—About 5 minims of salt solution (0.85 per cent.) are injected into the centre of the gland through a stout hypodermic needle, the gland massaged, and some of the fluid drawn back into the syringe, and then transferred to a slide.

DEMONSTRATION OF SPIROCHAETES.

(1) *Dark-ground Illumination*.—This is undoubtedly the ideal method. A thin slide is used, and a fine cover slip laid gently upon the specimen. Any good microscope suited to bacteriological work can be adopted by fitting the special type of condenser, and by using a strong, constant beam of light. The apparatus can be readily obtained from manufacturers, and as complete details of action and mechanism are provided with it, it is unnecessary to describe more than the principle involved. In the field of such a microscope an object becomes self-luminous, so that no previous staining or fixing is necessary, and any suitable material may be examined in the living state. The most satisfactory illuminant is that made by the Ediswan Company, and known as the "Pointolite" lamp. The conditions necessary to achieve self-luminosity are that the structure of organism should have a refractive index differing substantially from the medium in which it lies, and that it should be illuminated in such a manner that only the light refracted or reflected by the object can reach the eye of the observer. Under these conditions greater visibility is secured, and the object is seen as a bright image on a dark ground.

The microscopic method is not at all complicated once the simple mechanism of obtaining correct position of condenser and light is mastered. The differentiation of the organisms from the bores is relatively simple once the eye is accustomed to their appearance, rate and type of movement, and it is by no means a method which must be left to the bacteriologist alone.

(2) *Staining methods.*—In practice, the preparation of specimens by staining methods takes longer; many organisms are not stained and the observer loses the advantage of seeing a living field. There are a number of available procedures, all readily found in the literature, but it is the experience of the Committee that the Romanowsky staining in one or other of its modifications affords the best results, more particularly Giemsa's long method, although Leishman's and Homer Wright's are not far behind. In all *S. pallidum* is coloured rose pink, while other spirochaetes are blue in colour, but it is well known that the organism has a notable lack of affinity for most stains, and thus only an occasional individual may be made out in a specimen actually full of spirochaetes, giving a very erroneous idea of their frequency. Indian ink and Congo red methods are considered more unreliable, since, although all spirochaetes may be very easily demonstrated, it is very hard to decide on *S. pallidum* when there is so much possible distortion according to the thickness of the film.

CONCLUSION.

The point we would urge is the enormous saving of time and treatment by taking the earliest possible chance to recognise the disease and the fact that, although complicated when known by description alone, the dark ground method is relatively simple in practice and at the same time the most reliable. A short while ago many venereal centres made a practice of demonstrating these points to any practitioners who cared to co-operate with the Local Government Board schemes, and these advantages are still available. Centralisation of treatment is excellent, but the routine sending of patients to large clinics must inevitably waste some time, and this is a disease where, in its early stages, every hour is of importance. If the majority of practitioners could form a rapid diagnosis and give, when required, early treatment it would often save many weeks for the patient and the clinics from considerable expense.—*The Hospital.*

A New Sign of Foreign Body in the Trachea or Bronchi.

CHEVALIER JACKSON—The X-rays frequently reveal a foreign body in the chest, but the absence of a shadow does not exclude one. Similarly, auscultation and percussion are valuable in many cases, but less when negative than when positive. The writer describes a new sign of foreign body in the

trachea or bronchi, which he terms "the asthmatoïd wheeze," because it resembles the wheezing heard when the ear is placed to the open mouth of an asthmatic. The chief difference is that in asthma there are more or less associated rales while in the cases of foreign body the sound is drier, when typical, though it may be associated with secretion, adding more or less bubbling sounds. In a typical case, however, the wheeze is more marked after the coughing out of all secretion than before. This phenomenon is probably due to secretion more or less completely occluding the spaces by which air escapes between the bronchial wall and the irregular foreign body. When the secretion is cleared out more air passes, and consequently the wheezing is louder.

Numerous cases are reported in which the sounds in foreign-body cases have been studied, as heard with stethoscope or ear applied to the chest wall or over the cervical trachea or larynx, but the sounds emitted from the open mouth do not appear to have been mentioned. The nearest approach is the "croupy cough" indicative of a foreign body in the larynx. It is, however, not in the laryngeal cases that the asthmatoïd wheeze is elicited, but in the tracheal and bronchial. If there is a croupy cough the larynx must be looked at, when the question of a foreign body can be readily decided: but the indications for bronchoscopy are often not so clear.

The asthmatoïd wheeze is elicited by placing the ear in front of the open mouth of the patient while breathing deeply and regularly in and out, and is heard during expiration. If the wheezing is not noticed the patient is asked to carry respiration to the extreme limit as though endeavouring to expel all of the residual air from the lungs. In some cases the wheezing has been apparent only at the termination of this prolonged forced expiration. In many others the wheezing was so loud that it was noticed all over the room. Care is needed to distinguish between a wheezing caused by secretion and a wheezing caused by a foreign body. This cannot always be done with certainty. Moreover, more or less secretion is usually present in the neighbourhood of the foreign body. Usually the sounds of secretion disappear after coughing and expectoration, while the wheeze of a foreign body remains after the most violent and persistent coughing unless the foreign body has shifted. Smooth, rounded foreign bodies that cork a bronchus tightly do not produce the asthmatoïd wheeze—*M. Review.*

Rupture of the Cardiac Valves due to Shell Explosions.

M. PERRIN & G. RICHARD:—Rupture of the cardiac valves due to external violence is a rare accident of which only about 80 cases have been recorded. In the war a number of cases of lesions due to explosions, often at a distance, and due to the concussion of the aerial waves (the "wind" of the explosion) have been reported. Rupture of the two lungs and organic nervous lesions have been described. But not till 1918, after 3 years of war, was an organic

lesion of the heart reported. Cramer then described a case of aortic insufficiency due to this cause, and later Brossard and Heitz reported 2 cases of the same lesion due respectively to explosion of a large shell at a short distance and of a grenade. In such cases the question has been raised whether the lesion may not have been due to the projection of the patient against the earth. The writers report the following cases, which are important because the concussion due to the explosion alone explains the lesion.

A strong but obese soldier, aged 36, was carefully examined on several occasions because of slight dyspnoea on exertion: attention was paid to his heart and vessels, but only a little pulmonary emphysema was found. In the battle of Cappy on Sept. 26, 1914, he received a bullet wound in the thigh. The wound was dressed, and while he was being removed with other wounded in a cart, a large shell burst near it, smashing one of the wheels. The wounded were much shaken, and the patient was rendered unconscious for a short time. When he recovered he complained of oppression and pain in the chest. He was evacuated to a neighbouring town, and when heard of some weeks later stated that his wound was doing well, but that he suffered from his heart. Attacks of suffocation had never ceased since the explosion. When he came under observation again, in 1917, he had resumed his occupation of commercial traveller. He had recovered his weight, but was pale and sallow. Going upstairs produced dyspnoea and palpitation. The heart was hypertrophied, the apex beat being in the sixth intercostal space 2 finger-breadths outside the nipple line, and there was an aortic regurgitant murmur. Slight malleolar oedema was present.

A woman, aged 46, was in good health until a bomb was dropped during an air raid on Nancy, at a distance of 3 metres from her. The violence of the explosion was such that she thought she was lifted from the ground and would have fallen had she not taken hold of railings. She felt an acute retrosternal pain. She was able to get home, a distance of 400 metres, but bled severely from the nose on the way. On the following day the pain disappeared, but dyspnoea occurred on the least effort, and slight oedema of the ankles appeared. On examination a fortnight after the accident the pulse was 88, small and regular, but unequal, and there was a loud apical systolic murmur which was propagated in all directions, but especially towards the axilla. In Jan., 1918, these conditions persisted.

Probably the regurgitation was due to rupture of the chordæ tendineæ of the mitral valve, for in none of the published cases has necropsy shown rupture of the valve itself; the chordæ tendineæ or the muscoli papillares were affected, the former twice as often as the latter. The writers think that in their 2 cases incipient atheroma played a predisposing part. In the published necropsies antecedent lesions of the ruptured valves are almost always mentioned—sclerosis thickening, vegetations, and "ossification."

Before the war the causes of valvular rupture could be reduced to two—direct injury and effort. In the former case the thoracic region almost always was subjected to such violence as produced grave injury of the skeleton. This took the form of falls on the chest, blows or compression. Numerous observations show that violent effort may produce rupture of the valves. This has occurred in running, lifting a heavy body, fit of coughing, and coitus. At the moment of effort the glottis is closed and the thorax is fixed in deep inspiration. The air under tension in the lungs compresses the interalveolar walls and, obstructing the capillary flow, drives back the blood towards the heart. On the other hand, the effort provokes a more or less generalised contraction of the muscles, expressing the blood contained in them towards the heart. Rupture of the aortic valve is the most frequent, and then of the mitral. Rupture of the tricuspid valve is much less frequent than of the mitral. Only one case of rupture of the pulmonary valves is recorded. During the cardiac cycle there is in cases of injury of the chest one dangerous period for the aortic valves and another for the mitral. The former is the diastole, the latter the beginning of the systole. If the injury occurs at the time of the former the aortic valve is torn, at the time of the latter the mitral. In the neighbourhood of an explosion an enormous pressure is generated—200 kilos per square cm.—for a very short period—one to two hundredths of a second. This pressure falls directly on "the peripheral heart"—the capillaries and arterioles—and drives the blood towards the heart. According to the period of the cardiac cycle the aortic or mitral valve is strained.—*M. Review.*

Migration of Bullet from Neck to Appendix.

C. Harms.—In March, 1917, a soldier, aged 36, was admitted to hospital suffering from rigors, vomiting and violent pain in the right lower abdomen. There was a moderate degree of tenderness over McBurney's point, with definite rigidity of the abdominal wall. The temperature was 101.1°, the pulse 84. Appendicitis was diagnosed, but it was not considered severe enough to call for immediate operation. As, however, there was no improvement during the next few days, and the pain and fever persisted, laparotomy was performed.

The cæcum and appendix were healthy, but extending from the appendix to the omentum was a very vascular, tube-like adhesion, 8 cm. long, containing a shrapnel bullet. This was evidently the cause of all the symptoms, for its removal was followed by complete recovery. It transpired that in Aug., 1914, he was shot in the right side of the neck, above the middle of the sterno-mastoid muscle. There had been no wound of exit, and owing

to pulmonary signs, including hæmoptysis, a wound of the lung was diagnosed. An X-ray examination of the chest proved negative; the abdomen was not screened because there were no abdominal symptoms. He had been discharged after a stay of 10 weeks in a military hospital, and had attended his military duties without any difficulty, till the acute abdominal symptoms set in. The course taken by the bullet must probably have been along the muscles and vessels of the neck and through the upper thoracic inlet, the long axis of the right lung, the diaphragm and the liver. It must then have lain in the abdominal cavity without wounding the gut, and without causing any symptoms for 2½ years—*M. Review.*

THERAPEUTICS.

Treatment of Amœbic Dysentery with Ipecacuanha by Rectum.

G. B. LAWSON—Brem and Zeiler, in 1911, successfully used ipecacuanha by rectum and through the appendix after appendicostomy in several cases of amœbic dysentery that had not yielded to other methods. The writer has been using a similar method for about 5 years, although ignorant of Brem and Zeiler's work. His method is to put 60 or even 120 grains of powdered ipecac. into about 24 ounces of water; this is kept hot for an hour, but not allowed to boil. After washing out the bowel with warm water, this whole preparation, without filtering, is given slowly by rectum to be retained as long as possible. If there is much pain and tenesmus, only a part can be given. In a few cases, there was some discomfort and the treatment had to be slowed down. Formerly the writer at the same time gave salol-coated ipecac. pills. Later emetin came into use; he used this hypodermically with ipecac. by rectum. In two cases the ipecac. by rectum was successful without other treatment.

A man, aged 63, was seen on Dec. 4, 1917, complaining of rectal discomfort and 5 or 6 stools a day. The illness began 5 years before, with diarrhœa, which had been better and worse at times. In the spring of 1916 he was given emetin hypodermically in rather large amounts, with salol-coated ipecac. pills by mouth, and chaparro amargosa without much improvement. In Feb. 1917, he was given arsphenamin intravenously with improvement for nearly 4 months, and then a relapse. Later, he was again given arsphenamin without improvement. Since then he had fared badly, as a rule; the bowel was always full of gas and there were from 2 to 6 movements a day, with some blood-tinged mucus.

Rectal examination revealed many superficial yellow ulcers; the mucus from the rectum showed much pus, red blood cells and many large active motile amœbæ containing red blood cells. The patient was given the ipecac. preparation by rectum every day, with immediate improvement. The amœbæ, pus and blood soon disappeared from the stools, and for 5½ months he has had no trouble whatever. He has been using an occasional ipecac. treatment during this time. During this treatment he was not dieted in any way, and he did not stop his regular work.

The hypodermic emetin treatment for dysentery can be greatly aided by also giving ipecac. by rectum. It certainly seems preferable to apply a remedy locally rather than have it traverse the whole alimentary canal before reaching the seat of the disease. It also seems better to use some form of ipecac. by rectum rather than give it hypodermically, where it will diffuse through all the tissues of the body by the time it reaches the seat of the disease. Barium enemas can be seen with the fluoroscope to pass up to the cæcum. Probably ipecac. preparations rapidly spread to all the surface of the large bowel, where it can have a direct local effect and the soluble portion can be absorbed even into the deeper tissues—*M. Review.*

Calomel in Hæmorrhoids and Pruritus Ani.

F. W. Moller and others—Many years ago the writer found in "Excerpta Medica" an account, abstracted from a German medical journal, of the striking effects of calomel applied in powder form to hæmorrhoids. They and the adjacent skin are carefully cleaned and dried, and the calomel is then thickly dusted on them. The pain of the hæmorrhoids quickly ceases, and after the application has been repeated several times, the hæmorrhoids dwindle and are converted into pale, indolent flaps of skin. These claims on behalf of calomel were amply verified by the writer during the following years, but he thought the matter too trivial, or the remedy too generally known, to rush into print. But when it cropped up in the correspondence columns of *Ugeskrift* he added his to the testimony of many other correspondents. One of these, Ove Hamburger, has found the action of calomel powder on pruritus ani to be so striking as to deserve the rare praise of a specific remedy. Dusted on the anus and its neighbourhood after defæcation, it forms a white lacquer, traces of which are still visible 24 hours later. It is not, therefore, necessary, as one writer suggests, for the calomel to be incorporated in an ointment in order to make it adhere to the skin. Indeed, calomel ointment appears, according to another writer, to be comparatively inert and to be much less effective than calomel powder. One correspondent reports the case of a colleague whose pruritus ani had persisted for years, in spite of varied treatment, including the x-rays. Calomel in ointment form also

proved inert, but when dusted on as a powder, the disease vanished. Another correspondent gives a facetious account of two patients, one poor, the other rich. The poor man obtained instant relief by consulting the local practitioner who had been following the correspondence in "*Ugeskrift*" about calomel in pruritus ani. The rich man bled him to a German watering-place only to return with his pruritus as troublesome as ever.—*M. Review.*

Artificial Respiration.

The Third Resuscitation Commission, under the auspices of the Committee on Safety Rules and Accident Prevention of the National Electric Light Association, at its last meeting considered various efficiency methods of artificial respiration for emergencies as they are met with in peace as well as in war. This Commission, created about six years ago, has been investigating various phases of artificial respiration, including the mechanical and manual methods, and its conclusions, as reflected in resolutions adopted, merit careful consideration by the medical profession, medical colleges, hospitals, ambulance surgeons, fire and police departments, industrial plants, and the general group of persons interested in first-aid work.

It is significant that while there is an increased tendency to utilize mechanical devices, general dependence must continue to be placed upon the prone-pressure or Schafer method, because of its ready availability when apparatus for resuscitation is far from the scene of the accident. Reliance upon the use of special apparatus tends to diminish the efforts to train persons in the manual methods, and apparently discourages the prompt and persevering use of non-mechanical methods. Dependence upon the theoretical value of mechanical methods not infrequently deprives patients of the opportunity of receiving uninterrupted and continued artificial respiration because of the desire of a physician or police officer to hasten the removal of the patient to a hospital, thus increasing the risk of unsuccessful attempts at resuscitation.

It is unfortunately true that in many instances the methods of artificial respiration have received inadequate attention in hospitals and medical colleges, so that satisfactory handling of patients requiring this form of treatment is not always secured promptly.

In view of these facts, the following resolutions adopted by the Third Resuscitation Commission at its meeting, May 17, 1917, command careful attention:

"1. The prone-pressure or Schafer method of resuscitation is preferable to any of the other manual methods.

"2. Medical schools, hospitals, fire and police departments, the Army and Navy, first aid associations, and industrial establishments in general,

should be urged to give instruction in the use of the prone-pressure methods of resuscitation.

"3. Individuals who, from accident or any other cause, are in need of artificial respiration, should be given manual treatment by the prone-pressure method immediately on the spot where they are found. It is all-important that this aid be rendered at once. The delay incident to removal to a hospital or elsewhere may be fatal, and is justifiable only where there is no one at hand competent to give artificial respiration. If complications exist or arise, which require hospital treatment, artificial respiration should be maintained in transit, and after arrival at the hospital, until spontaneous respirations begin.

"4. Persons receiving artificial respiration should, as much as possible, be kept warm and the artificial respiration should be maintained till spontaneous breathing had been permanently restored, or as long as signs of life are present. Even in cases where there is no sign of returning animation, artificial respiration should be kept up for an hour or more.

"5. A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently the patient after a temporary recovery of respiration stops breathing again. The patient must be watched and if normal breathing stops, the artificial respiration should be resumed at once.

"6. Artificial respiration is required only when natural respiration has ceased. In cases of simple unconsciousness from any cause in which natural respiration continues, artificial respiration should not be employed without medical advice.

"7. The Commission recommends that in cases of gas asphyxiation, artificial respiration, whether given by a manual method or by special apparatus, should be combined when possible with the inhalation of oxygen from properly constructed apparatus.

"8. With regard to the employment of mechanical devices for artificial respiration the Commission feels that it ought not at present to take a definite stand either for or against any particular form of apparatus. However, the Commission recommends, that the use and installation of apparatus should be confined, for the present, to properly equipped institutions under medical direction. The Commission recognizes the great need of simple devices capable of performing artificial respiration reliably and efficiently. It therefore recommends a careful study of the problem, directed toward the development of a reliable method appropriate for general adoption. Such studies can best be carried on in properly equipped hospitals and laboratories which offer opportunities and facilities for critical observation and experimentation."—*A. J. of Surgery.*

OBSTETRICS AND GYNÆCOLOGY.

Some Common Faults in Midwifery Practice.

BY

RALPH WORRALL, M.D., M.CH.

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The Medical Secretary asked me to fill a gap and read a paper on a midwifery subject; I consented in the hope that it would at least excite comment and stimulate consideration of that branch of medical practice, which, always important, is doubly so at the present time.

What I have to say is based entirely on what I see and hear in my daily work, and does not pretend to be in any way complete.

The first fault in midwifery practice to which I invite attention may give rise to amusement; nevertheless, I am serious when I state my belief that cheap midwifery is largely responsible for bad midwifery. Cheapness begets haste, and haste begets shoddy, while the very foundation of safety and success lies in patience and a complete disregard of the flight of time.

The public have been taught to value and avail themselves of many recent innovations in the diagnosis and treatment of disease, such as X-rays, modern dentistry, vaccines and others. They must also be taught that pregnancy should be supervised, that the obstetrician should make a thorough examination of the various systems at the time of engagement, that regular analyses of the urine should take place, and, finally, that the presentation and presence or absence of complications in mother or child should be investigated during the last month.

If such a system were generally followed eclampsia would be very rare instead of constituting, as at present, such a serious cause of mortality; malpresentations would be detected and corrected prior to labour; appropriate treatment would be adopted for neoplasms, such as ovarian cysts and myomata; any unusual conditions of the foetus, such as hydrocephalus and polycystic disease of the kidneys would be discovered; finally, the practitioner would answer the call to attend freed from anxiety and uncertainty as to the conditions which he might find, and the wear and tear of Midwifery practice would be correspondingly decreased.

I have seen deaths from septic infection in the puerperium due to ovarian cysts (torsion of pedicle), myomata (sloughing from traumatism), polycystic disease of foetal kidneys (injuries to and infection of mother from prolonged attempts to deliver).

I have also seen pelvic contraction not diagnosed until late in labour, although with the patient erect it was apparent to the eye by the manner in

which the foetal head rode over the pubes. This patient was saved by Caesarian section and total hysterectomy of the infected uterus.

The undue protraction of pregnancy seems to be ignored by all but a few; in my experience it leads to most untoward consequences. No pregnancy should be allowed to continue more than two weeks beyond the calculated date if the history coincides with the measurements. At full term the fundus should be 33.7 cm. from the pubes (the bladder and rectum being empty).

In doubtful cases an anæsthetic should be given and an estimate formed according to the ease or difficulty with which the head can be pushed into the pelvis.

With regard to the methods of inducing labour in such circumstances, the most reliable seems to be the bougie and gauze. I have twice succeeded by passing my gloved finger through the disinfected os and sweeping it around, so as to separate the membranes. Thirty min. of castor oil, with four 0.18 gramme hourly doses of quinine has also been of help. In America the Voorhees bag is largely used.

Few patients seem to have had instilled into them the importance of hygiene during their pregnancy, or how peculiarly injurious is alcohol at such a time. In this connexion I should like to say that horse breeders have told me that difficult and dangerous labours were noticeably frequent in mares which were fat from too much food and too little exercise. In the accouchement of human mothers I think the experience of obstetricians generally is that thin, wiry women have the easier time. The moral is that exercise to the last should be enjoined and carbo-hydrates restricted, especially in the latter months.

Before leaving this part of the subject, I should like to urge that it be the invariable rule for the doctor to inform the patient before accepting an engagement that it is his duty to examine the various organs, and also during the last month to ascertain the presentation and that a fee would be charged for this work. The patient would also be expected to send the urine in for analysis every fortnight of the last three months.

If it were also stated that the fee agreed upon for the confinement would include ten visits, but no more, a frequent cause of disputes would be avoided.

I am gratified to recall that I was one of the first to raise fees for midwifery. I believe it is the interest of the public and of the State that this vitally important work should be adequately remunerated.

THE APPLICATION OF FORCEPS.

During labour I believe the most common fault is the application of the forceps before the full dilatation of the os. I base this statement on the large number of women whom I see with lacerated cervixes, associated with dense scars extending into the fornices. A lacerated cervix may occur in unassisted labour from strong uterine action, especially when associated with poorly developed or altered tissue, but I have never yet seen a scar across the vaginal vault without a history of forceps, and frequently of premature rupture of the membranes, with delayed labour, preceding the use of the forceps.

The forceps is a tractor, contra-indicated unless the passages are fully dilated and normal. Whatever defect may exist in imperfect dilatation or morbid condition, such as dense cicatrices, neoplasms, etc., must be successfully dealt with prior to the use of this instrument. If it should be necessary to apply forceps before the full dilatation of the os, the dilatation should be first completed by the de Ribes' bag or Harris' manual method, or Bozzi's dilator; the latter two methods are only suitable if the cervix has been "taken up" and is soft and yielding; even then there is danger of inflicting grave injury, unless great care be taken to avoid haste and force; the time occupied should be checked by the watch, to ensure dilatation and not tearing.

Admitting there is danger in all methods of artificial dilatation of the cervix, I believe there is far greater risk in applying forceps in the presence of incomplete dilatation.

I should like to refer to one contingency for which text-books do not furnish clear guidance, and that is the rupture of the membranes several days before the onset of labour. Should the case be left to Nature, or should active measures be taken to dilate the cervix and determine labour? In the absence of danger threatening mother or child I advocate the former course, and that notwithstanding the tragedy involved in the second of the following cases.

Case I.—Elderly primipara, at about full term, membranes ruptured four days before any pains whatever; lingering labour, owing to rigidity and slow dilatation of the os, eventually terminated spontaneously with living child; temperature of about 37.8° C. from the third to ninth day; good recovery; four children since.

Case II.—Elderly primipara at about full term, membranes ruptured three days before onset of labour pains; foetal heart heard up to second stage; labour, terminated naturally; total duration of labour, about twelve hours; child born dead; normal puerperium; no injury to cervix; exami-

nation several times subsequently showed the pelvis to be normal, except that the uterus is too large and hard. The patient was in apparent good health, and was extremely anxious for children, but has not again become pregnant, and I fear considers myself the cause of her blighted hopes. Both the patient and her only sister suffered from delayed puberty and scanty, irregular menstruation.

OCCIPITO-POSTERIOR POSITIONS.

Some twenty years ago a doctor practised in Sydney who did a large midwifery practice and enjoyed talking about the subject in which he believed himself to excel. I have heard him say he could always diagnose an occipito-posterior position by the fact that "the nippers" (forceps) were prone to slip. It did not seem to have occurred to him that he should have made the diagnosis previously. I fear that, even now, his attitude is too frequently followed. I have been called in to do craniotomy by two practitioners who had made repeated, unavailing efforts to deliver with forceps, without suspecting that they had to deal with an occipito-posterior position. It was easily rotated from the third to the second vertex by pressure with two fingers of the left hand in the vagina on the left side of the sinciput, while the right hand pulled the child's left shoulder from the right towards the left, the forceps were then applied and delivery very easily accomplished.

In more difficult cases I have affected rotation by inserting the whole hand into the vagina and seizing the head with the fingers and thumb. The posterior ear may be taken as a guide.

If, on making traction in such a case, the forceps tend to invert—that is, for the pelvic curve to look backwards instead of forward—it is better to take the instrument off and re-apply it.

The diagnosis of occipito-posterior positions is not difficult if one practices external palpation in every case.

Judging from the large number of women with relaxed pelvic outlets following on instrumental delivery, I am inclined to think traction with the forceps is too rapid and sustained in many instances. Nature should be imitated in her gradually and intermittently applied force.

MANAGEMENT OF THE THIRD STAGE.

Perhaps of all mistakes in midwifery practice, the most dangerous is undue haste in the third stage. Efforts to express the placenta before separation, as indicated by the rising of the fundus and lengthening of the extruded cord, are reprehensible, and will surely lead to disaster. It is surprising how frequently one can obtain a history of trouble in the third stage in cases of puerperal infection. In the absence of hæmorrhage or other untoward symptom, "watchful expectancy" should be the rule. In

one case I waited one hour and forty minutes and was rewarded by the placenta coming away easily with a minimum of hæmorrhage.

The retention of the placenta is almost invariably due to inertia or faulty uterine contractions; adhesions are extremely rare, the introduction of the hand into the uterus for the purpose of removing the placenta must be held to be a very dangerous operation, only to be resorted to after due consideration and in the presence of clear indications, such as hæmorrhage and failure to empty the uterus completely by expression of its contents. I believe, however, that the uterus should be completely emptied, even if this can only be accomplished by introducing the hand; to wait until symptoms of infection declare themselves is often to wait too long to save life.

Retention of membranes can often be avoided by allowing the uterus to relax during the extrusion of the placenta through the vulva.

THE PELVIC FLOOR.

Faulty repair of the pelvic floor is extremely common, which is not surprising when one considers the defective light, insufficient help and generally unfavourable conditions under which it is often attempted. The more frequently noted defects have been that there is a "skin perineum," but the torn muscular and fascial elements have not been united by deep suturing; the posterior vaginal column, which has torn away from its lower attachment and retracted up, has not been re-anchored in normal position by including its raw under surface in the sweep of the "crown" suture. The result is that the normal curve and shape of the vagina have not been restored; there is interference with vaginal drainage during the puerperium, and subsequent weakness of the pelvic floor, with prolapse.

I suggest that, if the light be bad, suturing should be postponed until daylight, when, under general anæsthesia, with the patient across the bed, held in the lithotomy position by a Robbs' canvas strap leg holder (which can be boiled), accurate approximation of torn surfaces may be made.

For the vaginal tears running up the sulci or elsewhere plain catgut sutures will suffice, but I believe it is a mistake to use any but silk-worm gut and horse hair for perineal sutures.

If the sutures are drawn at all tightly they will cut out in the œdematous swelling which always follows recent tears.

A pledget of wool squeezed out of weak biniodide solution may be placed in the vagina, to keep clear the field of operation during suturing.

I use full curved needles, round for vaginal work and Hagedorn for the perineum.

If a needle be broken in the tissues and cannot be found, it is wise to tell the friends that this has occurred, but that it is of no consequence, and will be removed later. I mention this because of the recent action for

damages against a suburban practitioner for having failed to remove a broken needle. The case went against the medical man.

INVOLUTION.

Subinvolution and displacement of the uterus are very common, and might be less so were more attention given to involution during the puerperium. The fundus is about 12.5 cm. above the pubes a few hours after delivery. On the second day it begins to fall at the rate of about 1.8 cm. each day, and by the ninth or tenth day should nearly reach the pubes. Many years ago Alexander McLennan, of Glasgow, pointed out that the rate of involution had an important bearing upon diagnosis, prognosis and treatment. Thus a rise of temperature without a corresponding rise in the fundal height should make one less anxious than if both rose synchronously; one should look outside the uterus for the cause of the pyrexia in such a case. The greatest delay in involution occurs in sapræmic endometritis. "A high fever with little, but sustained, rise in the height of the fundus indicates, besides mischief in the uterus, a more serious lesion outside of it." I believe the charting of the fundal height is a valuable procedure in the puerperium.

To take the measurements I use a brass stationer's foot measure, which is easily sterilized by boiling. The precaution must be observed of seeing that the bladder and rectum are empty. Daily friction of the uterus and sitting the patient up in bed for meals will aid involution.

On the other hand, too early resumption of household duties, involving lifting, standing or walking beyond a limited extent, will retard it. At the end of the third week a bimanual examination should be made, and any defect, such as malposition, noted.

In conclusion, I can only hope that these few practical points will be so amplified and added to in the discussion as to be of value to those about to commence the practice of midwifery.—*M. J. of Australia.*

A case of Double Uteri at St. Stephen's Hospital, Delhi.

BY
M. W. FAZELY.

Mrs. S., European, aged 35, menstruated at 13 years of age, quite normal; with the exception of a cold occasionally had never been ill. She was 27 years old when she married. In March, three months after her marriage, she had an abortion (2½ months) and never felt well. She consulted a doctor who advised and performed a curetting in June. Two months later, i.e., in August, she gave birth to a six months' dead fœtus.

The next year she had twin boys, nearly full term, who died soon after birth. There was considerable post partum hæmorrhage.

The following year she had a single full term child, a girl, who was very delicate and died after six months. There was some hæmorrhage after this confinement too.

After three years she had triplets, two boys and one girl, a boy 5 lbs. and girl 5½ lbs. were at full term with one placenta; they are now about one and a half years old: the third, a boy (?); the doctor who attended her said must have died in utero at 6 months. It had its own placenta. There was no hæmorrhage and she had had an easy labour, all three babies being born in half an hour. The patient says that during this pregnancy she felt "two very distinct tumours" on each side of her abdomen.

Between her second and third pregnancies she had been examined by two good doctors who were unable to find anything abnormal.

She was admitted on Christmas day at 2-30 P. M. in a very collapsed condition, with a history of three months' amenorrhœa. She had carried a pail of water on the 23rd and felt "something give." Since then she had had a discharge and pain. On the 25th at 9 A. M. she had considerable pain and a flow of blood. She had fainted about six times before she came to hospital and on admission was pulseless with all the cardinal signs of a bad hæmorrhage. A three months' foetus was found amongst the blood clots and other tissue extracted from uterus. A continuous saline was given during the operation. After removal of the foetus on inserting a finger double uteri opening into the same cervix were discovered. A finger was easily inserted into each fundus — the abortion was from the left uterus which was enlarged. One could realize how impossible it would be to detect such an abnormality when examining between pregnancies with an undilated cervix.

The patient nearly died on the table but was brought round by artificial respiration and every other restorative measure. She made an uninterrupted recovery.—*The Journal of the A. M. W. I.*

Prolonged Gestation.

A correspondent states that the husband of a primipara left his wife for the army on Jan. 5. Her baby was born 50 days after the 280 days usually assigned for the period of gestation. It weighed 8 lbs. The labour was a severe instrumental one, owing to the hardness and roundness of the head.

According to Mann and Brend's *Forensic Medicine* (1914) the longest gestation yet allowed in an English law court was 301 days, but in America a period of 317 days had been allowed. In Taylor's *Medical Jurisprudence* it is stated that Murphy has allowed 324 days and that Meigs considers that gestation might be continued for 12 months. Dr. Thurstan Holland (*Brit Med. Journ.*, March 15, 1902, p. 659) published the case of a young primipara. From the last date of normal menstruation to the birth of the child, the duration was 340 days; from the last coitus to the birth was 323 days; from the menstruation following the coitus (an abnormal period only lasting two days) the duration was 316 days.—*M. Review.*

THE ANTISEPTIC

APRIL, 1919.

Some Irregularities of the Heart and Their Treatment.



F the various forms of irregularities of the Heart, which require careful study and consideration, we shall deal in this article with the premature contractions (or extra systoles), paroxysmal tachycardia and auricular fibrillation.

The subject of premature contractions or extra systoles always has the attention called to his heart, and that, in itself, is disturbing, and the more so the more highly organized nervously he is. It is the pause, the heart stopping, and the heavier thrust at the next systole of the heart against the chest wall that awakens attention and at first apprehension. No one can feel it for the first time without wondering what it means, and, unfortunately, any symptom of heart disease is considered still by the laity as practically equal to a death warrant. The symptoms of faintness and a cold sweat and an anxious face are the result purely of a vivid imagination. As an incentive to consult a physician they are of value, for often enough they are found to accompany objective symptoms by which an accurate diagnosis of the condition of the heart may be established. They occur frequently in myocardial degeneration, often in valvular lesions, and often are the only signs of a disturbance of the nutrition of the heart. They are to be differentiated from heart-block. In heart-block there is a dropped beat. There is neither movement nor sound at the apex during the dropped beat. Whereas both the motion and the sound of a premature contraction can be detected at the apex, though both may be slight. Premature contractions of themselves call for no treatment. If they be the only signs of disturbed nutrition of the heart, it is best to ignore them. One can be taught easily to allay his fears of them, if nothing more than the unusual thump in his chest is felt occasionally. They do not, of themselves, demand advice to lighten one's work or to

change in any way one's usual method of life. If, however, by the accident of premature contractions the patient consults his physician and it is demonstrated that premature contractions are but incidents in a serious disorder of the heart, it is that which demands the right advice.

Paroxysmal tachycardia is a sudden jumping of the heart action into a rate of from 160 to 200 to be followed after a longer or shorter interval by just as sudden a return to normal rate. Such a paroxysm of tachycardia may last from a very few seconds to minutes, hours, days or even weeks. During the paroxysm the rate is maintained throughout at the same pace and is not affected by exercise or rest. This variety of irregularity of the heart is usually ventricular in origin and the impulse emanates from an eccentric focus over which the vagus has no control. It has been observed in hearts that were known to be diseased, but it has been noted also in hearts in which this was the first manifestation of disorder. When the paroxysm is short this irregularity produces simply consciousness of the heart's action. But in several cases there is a sinking sensation, and a sensation of weight in the upper chest and more or less dyspnoea are soon added. If the paroxysm still persists, cyanosis, belching of gas from the stomach, enlargement of the liver and a little general oedema due to gradual failure of the circulation are noticed. This affection must be differentiated from simple palpitation and from paroxysmal auricular fibrillation. From the former the rate of the pulse alone is usually sufficient. Simple tachycardia seldom raises the pulse above 130, whereas in paroxysmal tachycardia the rate is usually above 150. In simple tachycardia the rate is influenced by exercise and excitement which increases it and by rest and quietude of mind which diminishes it. This is not true of paroxysmal tachycardia, for the rate at first established is maintained. In simple tachycardia the acceleration of the pulse comes on gradually and diminishes gradually. In paroxysmal tachycardia the rapid rate is established suddenly at its maximum and ceases just as suddenly. Paroxysmal tachycardia is distinguished from paroxysmal auricular fibrillation by the regularity in time and in force of the pulse and by the heart not enlarging during an attack. The prognosis of this affection of the heart depends entirely upon conditions other than the paroxysm. It is customary to think that all such attacks shall ultimately end and that the patient shall be none the worse for it. That is the rule, but a paroxysm of tachycardia has been an accompanying symptom of the final act, both in diseased conditions of the heart and in cardiovascular sclerosis due to nephritis. There is no curative treatment for the paroxysm. An appalling list of remedies and remedial measures has been reported, and the last

thing given or done just before the paroxysm has ceased usually gets the credit for cure with the patient and his friends. Relief is obtained by a position which throws the heart forward against the chest wall. If the attack is prolonged over a period of hours or days it is more easily borne if a Bromide or a small dose of Morphine is administered. Reassurance, quiet, a stomach at rest, and an empty colon and time are the essentials. If fatigue has incited it, small doses of Tinct. Nux Vomica—one drop every hour—are found efficacious. In recurring attacks the education of the patient to the appreciation of the fact that he must live well within his daily reserve power is essential. Where this has been done we have known people to remain entirely free from them.

The next irregularity of the heart which we wish to draw attention to is the auricular fibrillation. This affection is characterized by a total irregularity of the cardiac rhythm, and the attack may be paroxysmal and cease completely after a certain time. Auricular fibrillation attends as a rule all cases of mitral stenosis. It expresses very many cases of myocardial degeneration from whatever cause, and it accompanies a good number of other pathological conditions of the heart. In itself it is a positive proof of a damaged heart. The symptoms of this fibrillation are not in the beginning so different from those of tachycardia or of a long series of premature contractions (or extra Systoles). But where it is added to other symptoms of heart failure all such symptoms are very greatly augmented. The treatment of fibrillation is peculiarly successful. It is in this disorder that Digitalis won its spurs as a cardiac stimulant and it is in this class of cases in which it rarely disappoints if given with intelligence and care. To obtain the desired effect, Digitalis should be begun in doses of 15 minims (not drops) every six hours and these doses should be continued until one of the physiological effects is produced, viz:—a slowing and strengthening of the pulse, diuresis, nausea and vomiting or diarrhoea, when the dose must be reduced. When the diagnosis is established the patient should be put to bed and told exactly the nature of his disease. The patient must be taught the language of the heart, for it speaks in no uncertain tongue. He must be made to understand that dyspnoea, a rapid pulse, precordial discomfort, unexplained fatigue of body or of mind and unexplained perspiration are the ways in which the heart says to him: "You are doing more than I can stand." He must be willing to deny himself many of the usual pleasures and hours of work that keep him at the edge of his resistance or a little beyond. The patient must be taught to select for nourishment the things that never distress him and not to indulge in excesses of any kind. The

patient must be taught also that complete relaxation or rest of about two hours on a couch in a well ventilated room each afternoon and of ten hours in bed each night is "Nature's sweet restorer." He must banish fear, suppress regret and look ahead with gladness. All these things, we are sure, can be taught him by his physician after he has been brought under the influence of Digitalis.

CORRESPONDENCE

THE EDITOR, "THE ANTISEPTIC."

Medicine and Politics.

SIR,—Now that the reorganisation and enlargement of the Provincial Legislative Councils is engaging the attention alike of the public and the Government, it may not be inopportune to urge the introduction of the non-official Indian medical element in the coming Councils which are all in view. At first sight the subject may appear to be of minor importance, but a deeper study and consideration of the more important interests sought to be secured through the agency of this class of medical men, will certainly reveal its supreme importance.

Education and health are two corner stones of the State. Eminent researchers silently toiling at their laboratories are from time to time shedding new light on the various vital questions of health and disease. The experiences gained during the dreadful war which has happily come to an end, have revealed immense possibilities for the prevention of disease and maintenance of a much higher standard of public health. And countries in Europe are leaving no stone unturned to profit by the discoveries of researchers and the experiences of the war. Even England, reputed for its highly advanced and efficient system of local self-government, has felt the necessity for further improvement and accordingly constituted a Ministry of Health. Such being the case there, what about this vast dependency—India—this most coveted Asiatic possession of the British Empire? Half a million people dying of plague annually, a million of cholera, five million of all kinds of fevers and, as though these were not a sufficient infliction, two-and-a-half million children dying before they are a year old and ten million of human habitations being but huts fit only for pigstyes—this appalling picture of the insanitary conditions of the country undoubtedly accentuates the need for urgent reform, whereby the host of diseases gradually decimating the population may be stamped out and public health improved and ensured.

The sanitary and health policy now in vogue is practically one shaped by the head of the medical administration of the province, because when

questions involving medical knowledge are to be decided the Surgeon-General of the province is the only member that can be looked to for advice, and it is virtually his individual opinion that prevails. With due deference to his professional skill and attainments it must be said that his knowledge of the habits, customs, religious scruples and sentiments of the people is so limited that his advice can only be a matter of theory. If, as is really the case, most of the earnest endeavours, made in the past, have aborted, it is due to the omission to enlist the support and co-operation of the non-official Indian medical men. No system of policy affecting the people, whether in connection with public health or sanitation or epidemic diseases or other allied subjects, can bear fruit unless and until it is actively backed up by the hearty sympathy and co-operation of non-official Indian medical practitioners who live with the people, move with the people, and whose popularity enables them to easily influence and guide the people to the goal in view. It is a matter of common knowledge that official persuasion, advice and guidance are generally viewed by the masses with a certain amount of fear and suspicion and are, therefore, evaded as far as possible.

Till quite recently questions of public health and sanitation were being treated more or less as matters of routine and the policy in vogue was, therefore, a hackneyed and monotonous one. But conditions have of late changed and are still changing. Public health and sanitation have rightly come to be regarded as matters of supreme importance upon which depends the moral and material strength of the State. The altered conditions, therefore, demand altered *modus operandi*, by means of which health reform can be carried to the home and hearth of the masses and to the events of their daily life. The foremost aim should be to stimulate and encourage voluntary efforts on the part of the people to propagate better ideas of health and sanitation and thereby ensure a higher standard of national health and strength. A task of such great magnitude cannot possibly be accomplished by the mere advice of the solitary head of the provincial medical administration or by his lieutenants in the districts.

In this province alone there are nearly 2,000 registered medical men of varying grades and qualifications of whom not less than 200 are practising at Madras. Given opportunities, they can successfully carry out any measure of reform appertaining to their sphere of activity. If they have not come forward in the past, it is not because of any disinclination to take part in the noble attempt to uplift their fellow-beings but because they had no place in the Councils of the State or in the Corporation. Few medical men who love their profession can win a seat in the Councils of the Government or in the Corporation by standing for election along with those whose sphere of activity is politics of different shades and such other controversial and knotty subjects. But matters have come to a stage at which these men can

no longer be kept out of the field without seriously retarding the progress of sanitation and public health. For the purpose of securing their support and co-operation all registered medical practitioners should be constituted into a distinct electorate and two seats in the Provincial Council and two in the Corporation should be thrown open exclusively to non-official Indian medical practitioners. As sanitation and public health do not come under party politics, such as Moderates and Extremists, Home Rulers and Anti-Home Rulers, Brahmins and Non-Brahmins, Indians and Anglo-Indians, etc., and there can be no two opinions in the matter of their importance to all alike I ask for a separate electorate. I hope the authorities will take the above observations into consideration.

Madras, 12th April 1919,

U. RAMA RAU, Rao Sahab

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following Journals.—

The Polyclinic. The Bristol Medico-Chirurgical Journal. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Monthly Cyclopædia of Practical Medicine. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Medico-Surgical Journal. The Journal of the Out-Door Life. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. Radium. The Canadian Medical Association Journal. The Calcutta Medical Journal. Le Monde Medical.

Business Notices.

The Editor's Office is at RAMABHAVAN, Poonamallee High Road, MADRAS.

The Manager's Office is at 323, Thambu Chetty St. Georgetown, Madras.

All literary communications and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7—8 or 10 s.,
Half page Rs. 4—8 or 6 s., a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

THE ANTISEPTIC.

Vol. XVI.]

MAY, 1919.

No 5.
Annual Sub-
scription Rs 5.

Original Articles.

SOME NOTES ON SERO-THERAPY

BY

S. WYARD, M. D., M. R. C. P.



THE treatment of disease by antisera is one of quite recent development and only of late years has it attained to any considerable importance. It is now, however, risen to be one of the most important subdivisions of practical therapeutics. Already the number of those pathological states amenable to this process is fairly numerous and their literature extensive, while with the progress of bacteriological and immunological research others will undoubtedly be added to the list and further refinements made in the dosage and mode of administration of the sera. Thus the scope of the observations which form the subject-matter of this paper is very wide and the space now at my disposal precludes any attempt at a complete consideration of all the details of antiserum treatment: nor is it even possible to review all those diseases in the cure of which antisera have been employed. The object, therefore, of this paper is to deal with some half a dozen diseases against which antisera of proved efficacy have been prepared but for the most part to deal with general principles and especially to define some of the risks attendant upon their use.

The rationale of serum therapy is simple and very obvious. From the time of the earliest physicians it has been recognised that certain diseases confer subsequent immunity; for example, an individual rarely suffers from two attacks of small-pox or in other words one attack of small-pox renders the sufferer immune to any further attack of that disease. Here for many centuries the matter rested and no explanation was forthcoming as to why and how this state was brought about. Hypotheses were numerous but careful observation and experiment were lacking for the production of a

reasonable theory. At the present time science has a more secure foundation but has by no means got down to the bed-rock. The theory of immunity is one of the most fascinating in the whole realm of medicine but does not directly concern us from our present point of view. The rival opinions of Metchnikoff, of Ehrlich, of Arrhenius and Madsen and of Bordet have all, respectively, their supporters; but far greater knowledge is yet required before any can be finally accepted and it is probable that none will survive without modification. The *rationale* of serum-therapy, however, in no way depends upon which of these views be accepted, being based upon certain incontrovertible facts, whatever their explanation. Thus it is found that if an animal be taken and injected with a living pathogenic organism, e. g., a sheep with anthrax, it will succumb to the disease. If on the other hand the dead organisms be so given the result varies with the dose—a large amount causes death, a less amount produces temporary sickness from which the animal recovers, minute doses produce no effect. If now an animal which has completely recovered from the effects of a medium dose be injected with a large dose it is found more resistant and after several repeated doses will often be found capable of withstanding without ill effects large doses of the living organism, i. e., it has been immunised. That this is due, at any rate to some extent, to an alteration in the blood is shown by the fact that if an immune animal be bled and the serum collected from the clot be injected into another animal this latter is now capable of withstanding without ill effects doses of the organism which are fatal to control animals, i. e., immunity has been transferred from the first to the second animal by means of the blood of the first, and the substances in the blood of the first to which the immunity has been found to be due are antitoxins, precipitins, agglutinins, opsonins, bacteriolysins, etc. Whether these are merely different names for the same body acting in various ways or are in fact separate and distinct ones from the other is not yet decided—evidence is accumulating which points to the former as more probable. For a full discussion of all these questions the reader is referred to the text-books on the subject. Having then demonstrated that immunity can be transferred from animal to animal by means of the blood serum it was natural to apply the same principle to man and by introducing into his body the blood serum of an immune animal to attempt to prevent or cure human disease. The attempt, moreover, met in the case of one or two diseases with brilliant success and although in certain others the results were not so good yet they are sufficiently hopeful to allow the belief that with increase in knowledge and some modification in the technique they may very materially improve.

Active and Passive Immunity.

The above experimental findings reveal the fact that there are two kinds of immunity, viz., that produced by the tissues of the animal reacting to the

stimulus of a virus introduced into its body and that effected by transference of serum from an immunised to an untreated animal. The former type is called active, the latter passive immunity. There is in addition a third type—natural immunity—which has no bearing upon the present subject, in virtue of which an animal or species of animals is insusceptible to invasion by certain organisms, e. g., the cold-blooded animals to tetanus, man to avian tubercle, etc. It is, further, entirely independent of any of the bodies taking part in active and passive immunity.

From the point of view of the prophylaxis and therapeutics of human maladies it is necessary always to bear in mind that active and passive immunity differ in two very important respects. As a general rule active immunity attains a greater intensity and persists for a longer time than passive, although to this rule there are one or two exceptions, notably the case of the pneumococcus. On the other hand the former type requires a longer period—often weeks or even months—for its full development, whereas the latter reaches its maximum directly the serum enters the circulation. This matter will receive further consideration in a later paragraph.

The degree or intensity of the active immunity acquired by an artificially immunised animal steadily increases consequent upon a series of gradually increasing doses of the particular virus employed until a certain point is reached after which no further increase can be brought about. This point varies with each individual; the blood-sera of different immunised animals will thus be of different strengths, i. e., will contain different amounts of antibody and the actual amount can only be determined in each case by experiment. The degree of passive immunity gained is directly proportional to the amount of antibody introduced into the blood-stream and a given degree can thus be obtained by the introduction of a small amount of strong serum or greater amount of a weak—this of course within certain limits. As a rule antisera are supplied for use in more or less standard concentration obtained by mixing stronger and weaker sera in suitable proportions. The unit in which the strength is measured differs with the virus causing its formation. The methods employed for the measurement will be described later. The degree of immunity produced in man by the administration of an antiserum is at present incapable of any exact determination and the amount of such serum necessary to obtain a given effect in given circumstances can only be found by analogy and previous experience.

Methods of Administration of Antisera.

Many routes have been employed for the introduction of serum into the body, the efficacy of the treatment depending to a very great extent upon the route chosen. Upon this too depends the rate at which the serum is absorbed, i. e., reaches the blood.

1. *Intravenous.* The serum is taken up into the barrel of a syringe of suitable size fitted with a needle possessing as sharp a point as possible. If the needle be at all blunt the vein may be merely deflected to no one side of it or such force will be required to puncture the vessel that the needle will transfix it and pass out again at the opposite side. Where large quantities of serum are to be injected it will be more convenient to use a needle fixed in the end of a rubber tube at the other end of which is a funnel. The serum is then poured into the funnel and allowed to flow into the vein by gravity. Should any swelling appear about the point of the needle it is obviously not in the vein and the error in position should be at once rectified. The serum must always be heated to 37° C. before injection; the vein usually chosen as being the most convenient is one of those in the antecubital fossa. Here they stand out plainly to view or may be made to do so by a temporary light constriction of the upper arm. (This must be removed immediately the vein is entered and before the injection is commenced.) The needle is held almost parallel with the surface of the skin through which it is passed obliquely into the vein. The position of the point may be determined by slightly withdrawing the piston of the syringe when if blood enters the barrel it is certain that the point rests within the vessel. The serum may now be injected slowly and steadily, care being taken that no air is introduced. When this is complete the needle is smartly withdrawn and the site of the puncture wiped with iodine. No bleeding should occur and no dressing is necessary. It is, of course, essential that throughout the operation the strictest aseptic precautions be taken. If this be properly attended to no danger nor discomfort whatever is experienced. It is neither necessary nor desirable to incise the skin and expose the vein.

Intravenous injection offers the advantage that the antiserum at once reaches the blood-stream and the maximum effect is immediately obtained: there is no latent period during which absorption may take place. It should therefore always be used where time is an essential factor and a delay of a few hours may prove fatal. An objection to the use of this route lies, however, in the greater risk of anaphylaxis (*vide infra*).

2. *Intramuscular.* The injection is made into the body of a muscle, generally in the buttock or outer side of the thigh. The method causes but the slightest pain and discomfort and absorption is rapid, being complete in a few hours. The maximum immunity is reached less rapidly than with the first method but more rapidly than with those following.

3. *Subcutaneous.* This is perhaps the commonest route and is eminently suitable in all cases where time (measured in hours) is not of moment. The serum is put into the subcutaneous cellular tissue whence absorption fairly readily takes place and is generally complete. The antibodies, however, take longer to appear in the blood than with the first two methods

and the amount present in the general circulation rises steadily from the time of injection until the maximum is reached in about 48 hours.

4. *Per os.* Although the chemical composition of antibodies is not certainly known they are undoubtedly closely allied to, if not identical with, the proteins and it has been found that like the latter they undergo peptic and tryptic digestion. They are, however, rather resistant, for digestion may be carried to a considerable degree before the antibodies disappear but complete digestion causes complete inactivation. It would thus appear that the administration of antisera by the mouth would be useless were it not that some observers have reported satisfactory results after the use of diphtheria antitoxin in this manner. No explanation of the apparent paradox can yet be given but it may be that the alimentary mucosa is capable of absorbing some of the antibody after partial but before complete digestion has taken place. Further evidence in favour of such a possibility is furnished by the fact that it has been found possible in certain cases to cause absorption of unchanged protein from the alimentary canal direct into the blood-stream and it may be that the intoxication of diphtheria effects some change in the permeability of the gastric and intestinal mucosa whereby the same thing is brought about. Some of the antibody must, however, be lost in the process and it is probably unreliable so that one of the other routes should always be used unless there is some contra-indication.

5. *Per rectum.* It is possible to effect absorption by this route if the colon be previously thoroughly cleared out but the process is so exceedingly slow as to nullify all value of it for therapeutic purposes.

6. *Intrathecal.* This method is employed in the cases of tetanus and cerebro-spinal fever. The serum must be heated to 37° C. before injection and the theca is reached by lumbar puncture. As a rule the needle is inserted between the 3rd and 4th or 4th and 5th lumbar vertebrae. The patient is anaesthetised and turned on to one side with knees well drawn up and the spine arched as much as possible. A line joining the summits of the two iliac crests passes through the spine of the 4th lumbar vertebra. The needle which should be about four inches long and made of nickel so that it can bend without breaking, is pushed forwards and slightly upwards in the middle line. At first the resistance of the interspinous ligament is very great; the sudden cessation of this resistance indicates that the theca has been entered. The needle is pushed on till it reaches the opposite side of the canal and then slightly withdrawn. This ensures that the tough dura mater has been pierced. Now on removing the stylette from the needle cerebro-spinal fluid will flow and as much as possible is drained off. Where there is no meningitis the amount removed should not exceed 25cc.; in other cases as much as 75 to 80 cc. may be taken. The quantity of serum injected should be slightly less than that of the cerebro-spinal fluid

withdrawn. It may be introduced by a syringe, applying slow and steady pressure, or by a tube and funnel allowing gravity to do the work. In the latter case all air must be expressed from the tube before allowing the serum to flow to ensure that no air enters the spinal canal. The operation completed, the puncture hole is covered with a piece of gauze and collodion, the patient turned upon his back and the foot of the bed raised on blocks to aid, if possible, the transference of the serum to the upper parts of the system. The puncture may be repeated daily for fourteen days or so, using each time the same track without danger, provided always that the strictest aseptic precautions are adopted.

The needle may, if desired, be entered at a point half an inch to the right or left of either of the points indicated above and pushed forwards, upwards and inwards until the theca is penetrated. Each worker must determine for himself which route to take.

In certain cases spinal puncture may be effected in the cervico-dorsal region—between the 8th cervical and 1st dorsal vertebrae—but then care must be taken that the needle only just enters the canal and does not penetrate the cord. The operation is perhaps rather more difficult than in the cases of lumbar puncture and slightly more risky. It is only used in severe tetanus when a desperate condition calls for a desperate remedy.

Absorption from the spinal canal is slow and this route presents no advantages except in those cases where an intense and rapid local effect upon the central nervous system and its coverings is aimed at rather than the generalised action brought about by the circulation.

7. *Intracerebral.* Tetanus is the only disease for which intracerebral injection has been recommended. A trephine hole having been made in the skull a needle is inserted and the serum injected direct into the cerebral tissues. The results obtained are not commensurate with the risks incurred and this method is not to be recommended; it is probably not justifiable.

8. *Intraneural.* Like the last this route has been used only in the treatment of tetanus. The trunks of all nerves supplying the site of infection are exposed and into the sheaths is injected the antitoxin. Opinion is divided as to the value, which is, however, probably not very great, though in early cases it might serve to prevent the access of further toxin to the central nervous system and to give serum administered by other routes a greater chance of effecting a cure.

By whatever route the antiserum gains access to the body the resulting immunity, unlike active immunity, does not persist for any considerable length of time. Having reached a maximum in a period varying with the mode of administration it remains practically unchanged for about seven days and then steadily falls until it has completely disappeared in another seven

days or so. The antibodies are lost partly in the excretions—urine, milk, etc.—and partly, in all probability, owing to fixation by the tissue cells of the body. It is thus seen that passive immunity may be, and generally is, sufficient to cure a disease or afford the tissues an opportunity of working out their own salvation but that as a prophylactic its value is limited owing to its short duration. Nevertheless there are circumstances in which to employ it even for this latter purpose amounts almost to a crime.

Preparation of Antisera.

Before passing to individual conditions it will be well to say a few words concerning the mode of preparation of antisera which is necessarily essentially the same in each case and to discuss the general precautions to be taken in the therapeutic use of these sera. The animal chosen to supply the serum is invariably the horse, as being domesticated, easy to manage and large enough to yield considerable quantities of serum at each bleeding. Every care must be taken to ensure that the animal is free from all disease and to keep it so throughout the course of the experiment. It is housed under the most perfect hygienic conditions and its life regulated so as to keep it in good health. With the details of immunisation we are not now concerned, suffice it to say that the immunity rises to a maximum beyond which no increase can be obtained. The animal is now bled with the strictest aseptic precautions and the blood collected aseptically. When recovery from the operation is complete a second, and later again often a third, bleeding may be carried out but after this it is found that antibodies are no longer formed nor can their formation be induced by further inoculations with the virus. The horse is then returned to work just as any other of its species and so lives out its life. In the meantime the collected blood is allowed to clot and the serum to separate out, the latter then pipetted off, a small percentage of tricresol or other antiseptic added to keep it free from bacterial contamination and put up in hermetically sealed phials of suitable size in which form it is distributed for use. The antibody does not keep indefinitely. Even in ideal conditions it is gradually destroyed. Sunlight and warmth increase the rate at which this change occurs. All sera should therefore be stored in a cool, dark place. Each phial bears a label indicating the nature of the serum and, where possible, its total antibody contents; also the date of manufacture and that after which the serum should no longer be used.

Horse serum is primarily and inherently toxic to man but its toxicity varies with the route by which it is introduced. Thus intravenously it rarely if ever causes any disturbance; intrathecally a mild aseptic meningitis occurs evidenced by a slight increase in the amount of cerebro-spinal fluid and a more or less marked leucocytosis; intramuscularly slight tenderness persists for a short time about the site of injection and the surface may be a little

hot; subcutaneously the signs may vary from slight local redness to swelling, redness, heat and pain, the oedema spreading in some cases from shoulder to fingers when the upper arm has received the serum. Apart from sepsis there is never any formation of pus and the tissues slowly resume their natural condition in 48 to 72 hours. As a rule no treatment is required, but in bad cases hot fomentations and immobilisation of the part will give relief. In this respect the serum varies with the individual horse, hence the best makers test all sera before issue for use and reject any specimens which show themselves too toxic.

Anaphylaxis and Antianaphylaxis.

Quite distinct from the above is the power of every serum to provoke anaphylaxis. A definition of this term is at present impossible. It was originally employed to denote a symptom complex due to a condition of hypersensitiveness of the animal body to a given substance produced by previous sublethal dose of that same substance. Whether or not it can be brought about in other ways is not yet certain. Nor does it matter from our present point of view. What is certain is that a dose of horse serum administered to a human being may after a time lead to that person's becoming so sensitive to horse serum that a further injection (which would be innocuous to a normal individual) is not capable of producing severe and even fatal troubles. It is therefore of the utmost importance to be always on the look-out for this possibility and to take all possible precautions against it.

In man the danger of anaphylaxis has undoubtedly been greatly exaggerated. It is difficult to produce the state of hypersensitiveness in him. It is, however, sometimes found, and anyone who has once seen a case will not wish to see another. Anaphylaxis never follows a first injection of serum. The essential conditions for the establishment of the anaphylactic state are:—

1. A previous injection or injections. Small doses are more liable to be efficient in this respect than large. This is the sensitising dose.
2. A period free from any injection.—A sort of incubation period. This is at least 12 to 14 days but is longer in proportion as the previous injection is larger. The incubation period varies inversely as the size of the sensitising dose. This is a general rule but exceptions are by no means uncommon.

During the incubation period there is no danger of anaphylaxis and further injections of serum may be made with impunity, but once the anaphylactic state is established it is quite otherwise and the greatest care is required in administering further amounts. Unfortunately it is absolutely impossible to determine whether or not the patient is in this state so that

were no means available for rendering a hypersensitive person insusceptible to the serum, i.e., of rendering him antianaphylactic, it would be almost impossible to continue serotherapy. Such, however, is not the case and it has been amply demonstrated by experiment that antianaphylaxis can be certainly, quickly and easily induced by suitable means.

At the present time serotherapy is so commonly and universally employed that it is impossible to be certain that any particular patient has not already had at some time in the past a dose or doses of horse serum. In every case therefore where it is deemed desirable to have recourse to the use of an antiserum it is well to assume that the patient is in the anaphylactic state and proceed accordingly. All routes that may be used for sensitisation may equally be used for desensitisation:—

1. *By the mouth.* Large amounts of serum if given by the mouth will after the lapse of 3 to 4 days produce a state of antianaphylaxis. The large amount to be administered and the length of time required for the establishment of the refractory condition renders this method inapplicable for therapeutic purposes.
2. *By the rectum.* After washing the colon and rectum thoroughly serum may be injected and is slowly absorbed. About 24 hours is necessary for desensitisation so that like the last this method is rarely or never applicable therapeutically.
3. *Subcutaneous and intramuscular.* 3 to 5 cc. by either of these routes are efficient after a period of 4 or 5 hours when further injections of any amount may be safely given. The serum may also be given in such a way as very slowly to enter the subcutaneous tissues, as with continuous subcutaneous saline injection.
4. *Intrathecal.* 2 hours after an intrathecal injection of 5 to 10 cc. of serum the patient will withstand any further doses. Either of the last 3 methods may be used where time is not of very great importance but in those cases where every minute counts and any delay may materially diminish the chances of recovery some more rapid process is called for. This is furnished by the intravenous route.
5. *Intravenous.* 5 c.c. of the serum are diluted 1 in 10. Of this 1 c.c. is injected into a vein at the bend of the elbow. After 3 to 5 minutes another 4 c.c. are injected. If no untoward symptoms arise 8 c.c. are injected 3 minutes later and again after 2 or 3 minutes 12 c.c. Finally yet another 2 minutes later the remaining 25 c.c. In 10 to 15 minutes the patient is completely desensitised and any desired amount of undiluted serum may be introduced into his circulation. This is undoubtedly the best method to employ in the majority of cases.

Should anaphylactic shock ensue upon an injection of antiserum it will be evidenced as follows. The onset is sudden and rapid—within 15 to 20 minutes at most. Sometimes it is heralded by the appearance of a rash, almost or quite universal in its distribution. Generally urticarial in character it may in a few cases be erythematous, scarlatiniform or morbilliform. The eyelids become puffy, conjunctivæ infected, the lips swollen and the face congested. With or without these preliminaries the patient becomes restless, respiration becomes more rapid and there is marked dyspnoea. Inspiration is especially difficult. The chest is in the position of forced inspiration, rigid and almost motionless. The eyes are staring; the face and mucous membranes cyanotic; the pulse rate rises. On auscultation of the chest the normal vesicular breath sounds are found replaced by a broncho-vesicular murmur without any moist sounds. In less severe cases there may be orthopnoea with laboured breathing and a paroxysmal or almost continuous dry cough which is very distressing. The throat may be dry so that some dysphagia is experienced. Death may ensue by asphyxia or cardiac failure but in the majority of cases the symptoms disappear as suddenly as they appeared and in 10 to 20 minutes the patient is completely recovered.

Treatment of Anaphylaxis.

In all cases immediate and energetic treatment is called for. Ether anæsthesia is thought by some to prevent anaphylactic shock but it is doubtful if this is really the case. It is possible that it merely masks the symptoms. In any case a general anæsthetic is inadvisable if it can be avoided. Ether or Nitrite inhalations may be of service in overcoming the bronchial spasm which is responsible for the dyspnoea but the latter being a cardiac depressant is better dispensed with. Certain drugs have been employed, viz: Atropine, Adrenaline, Chloral Hydrate and Oxygen. Of these the first is probably the best. Administration by the mouth or subcutaneously is always too slow to be of much, if any, service and intravenous injection should be practised: Atropine 1/200 to 1/100 gr., Adrenaline (1 in 1000) 2 to 3 m. Many cases, however, will have recovered before any of these measures for relief can be brought to bear. Others in whom the drug does not produce an instantaneous effect may require artificial respiration for a short while.

Anaphylactic shock in the past is no contra-indication to subsequent treatment with an antiserum. Once past the height of the shock a patient is safe and moreover desensitised so that further serum may be given with impunity.

Serum Sickness.

Yet another result of the par-enteral introduction of a foreign serum into the human body is the so-called "Serum Sickness". Whether this is merely one manifestation of anaphylaxis is not yet certain. It has generally been

considered as such but there is reason to believe that it is a totally separate and distinct phenomenon. It appears at any time after an injection of serum from a few minutes up to 12 or 14 days. It is characterised by a rash, adenitis and joint pains. Numerous rashes have been described but by far the commonest is urticaria, generally accompanied by a patchy erythema. The latter may be present alone or the rash may be altogether scarlatiniform or morbilliform. The situation of the rash varies much and may occupy any part of the body from a small area immediately about the site of inoculation to the whole superficies of the body. Itching is generally intense and almost unbearable. It may be relieved by dabbing with Sp. Vin. Meth. Lot. Ac. Carbol (1 in 60), hot. Calaminæ or Sp. Vin. Meth. 3 iv, Lot Calaminæ 3 xvi. As a rule the rash persists for 24 to 48 hours. It is very liable to recur appearing suddenly and disappearing as suddenly 4 or 5 times in the course of as many days. The adenitis is not very marked. Most of the superficial glands become slightly enlarged, hard and tender. They never suppurate and return to their normal condition in due course. The joint pains are due to an aseptic inflammation. No permanent disability results. At the same time there may be transient albuminuria in a few cases and frequently some fever.

And now having briefly considered how and why serum therapy should prove efficient it is time to turn to those diseases in the cure of which it has proved so. As already stated it is impossible here to deal with every detail of the application or with every disease to which it has been applied and this paper is limited to a sketch of eight of the latter, viz:

Diphtheria, Tetanus, Cerebro-Spinal Fever, Dysentery, Streptococcal Infection, Cholera, Plague and Snake-Bite.

Diphtheria.

This is a disease characterised by a local lesion with Toxæmia. The bacillus elaborates a true toxin which gains entrance to the blood stream and so is distributed throughout the body. This toxin can be obtained from cultures and after removal of all organisms. In this form it is capable of producing all the general manifestations of the true disease. Diphtheria antitoxin is an antitoxin pure and simple having no bactericidal action. It is always standardised and the phials in which it is issued show the number of units contained in each. The unit of diphtheria toxin is the smallest amount which when injected into a guinea pig of 250 grms. weight always causes death in 96 hours. The unit of antitoxin is the smallest amount which, when mixed with a 100 units of toxin and injected into a guinea pig of the same size as above always saves it. Behring and Roux have both devised other units for the measurement of the immunising power of this antitoxin but these are now never employed in the prophylaxis and treatment of human beings.

Every case of diphtheria should receive a dose of antitoxin immediately it is seen. Every hour is of importance. The mortality of this disease varies directly as the length of time between the onset and the first administration of antitoxin. Thus within the first 24 hours practically every case can be saved whilst after the 4th day the mortality is unaffected by serotherapy. In case of doubt there should be no delay pending bacteriological diagnosis: an injection of antitoxin will do no harm even if the case prove to be something other than diphtheria.

The dose required varies with the age of the patient and that of the disease but large doses are always better than small. In the first 24 hours a child should receive 1,500 to 2,000 units, after that time the dose should be proportionately increased up to 8,000 or 10,000. The corresponding doses for an adult should be 2,000 to 4,000 if given within 24 hours of the onset rising to 20,000 to 30,000 if not given till the fourth day. In mild and early cases the intramuscular route is probably best adapted: in later and severer cases the intravenous. Many authorities are opposed to this latter route as being dangerous (*vide supra*): the writer is emphatically not of this opinion. Desperate diseases require desperate remedies and even were anaphylaxis really to be feared it would still, in many such cases, be justifiable to take the risk. It is, however, as pointed out above, now possible to prevent anaphylaxis with absolute certainty. Formerly, when it was necessary, in giving an intravenous injection, first to anaesthetise the patient, then cut down and expose a vein, insert a canula and finally ligature the vessel at the end of the operation, the intravenous route was certainly only to be employed after much thought, but now no such procedure is required in that it is simplicity itself to introduce a needle straight into a vein in the antecubital fossa without incising the skin. There is, therefore, no real reason for rejecting the intravenous route and the extra rapidity with which antitoxin passed direct into the blood stream. If the toxin already there is an overwhelming reason for its adoption.

After administration of a suitable dose of antitoxin the patient should be carefully watched and next day his progress noted. Then, should the disease have increased in severity, or should the membrane have increased in extent, a second large dose is indicated. Should the membrane have remained stationary a further but not so large dose should be given, somewhere about half the first dose. If the membrane has diminished in area it is not necessary to repeat the injection. But in every case, until convalescence is definitely established, the throat must be carefully examined daily and, on the slightest suspicion that the disease is again gaining ground, more antitoxin should be given.

As stated above this antiserum has no antibacterial properties; it is, therefore, not sufficient to trust entirely to it. While leaving it to neutralise

any toxin circulating in the patient's body the usual steps must in every case be taken to cleanse the throat, e.g., by gargles, antiseptic swabbing, etc. This antitoxin has been administered per rectum and per os. It is extremely doubtful if any enters the circulation in the latter case and absorption in the former case is so slow that much valuable time is inevitably lost. Nor have they anything to recommend them beyond the fact that they avoid the necessity for a needle prick and if the needle be sharp that is but a very little matter. These routes are therefore unjustifiable.

For prophylactic purposes 500 to 1,000 units should be given subcutaneously. Immunity thus conferred lasts about three weeks.

Tetanus.

This, like the above, is a local lesion with toxæmia. Unfortunately the mode of absorption of the toxin (along the lymphatics of the nerves supplying the part affected); its early fixation to the cells of the central nervous system, and the fact that much is probably absorbed before symptoms are produced, renders the antitoxic treatment of this disease far less satisfactory than in the case of diphtheria. However, much can be done in this way and it is certainly absolutely criminal not to give the patient the full benefit of it.

Tetanus antitoxin is in all respects similar to diphtheria antitoxin. It is a true antitoxin without antibacterial properties and is prepared by immunisation of a horse with a pure toxin. Since the antitoxin content of the serum varies with each animal those specimens issued for use are generally mixtures of a number of sera made in such proportion as to yield an antiserum of approximately standard strength. This potency is measured in a manner analogous to that of diphtheria. The unit of tetanus toxin is the smallest amount which inevitably causes death of a guinea pig weighing 300 grms. in 48 hours. This is called a minimal lethal dose or 1 M. L. D. The unit (U. S. A.) of tetanus antitoxin is the smallest amount which will completely neutralise 1,000 units of toxin. All English and American manufacturers use this system of measurement but some others use the French measure devised by Roux and Behring which is expressed as the ratio of the amount of antitoxin taken to the weight in grammes of mice which that amount will immunise to 1 M. L. D. of toxin. Thus, for instance, an antiserum 0.1 c.c. of which will protect 1,000 kg. of mice is said to be active in 1/10,000,000 or 1 c.c. contains 10,000,000 immunising units.

Two questions now arise: (1) that of prophylaxis and (2) that of therapeusis.

(1) Every person receiving an injury of such a nature and inflicted by such means as to raise the possibility of infection with *B. tetani* should receive a prophylactic injection of antitetanic serum (A. T. S.). At the present

time most manufacturers make this in two strengths, one containing 1,500 units (U. S. A.) in 9 or 10 c.c. and another containing 8,000 units (U. S. A.) in 10 c.c. For prophylactic use the former is much cheaper and quite as efficient. 500 to 1,500 units should be given according as the wound is deeper and more extensive and the probability of infection greater. The subcutaneous route is the most convenient. If the wound is not healed it is well to repeat this dose on the eighth day. As a rule this will be sufficient, but in a few cases where the wound is very extensive, suppuration extreme and healing slow, it will be necessary to repeat the inoculations every week till all possibility of the supervention of tetanus is passed. If serum standardised by the French method be used 20 to 30 c.c. of serum (1/5,000,000 to 1/10,000,000) should be first given and repeated if necessary as indicated above. The protection afforded by prophylactic doses is but short-lived. The antitoxic content of the recipient's blood rises to a maximum about the seventh day and then steadily falls until it is practically zero at the end of three weeks. These quantities rarely if ever anaphylactise a human being but will fairly frequently be followed by rashes (*vide supra*). The occurrence of a rash is no contra-indication to further treatment with the antitoxin which may be continued without any danger. The first prophylactic dose should be given at the earliest possible moment after the infliction of the injury; the earlier it is given the more certain is the protection afforded. It does not succeed, however, in every case and tetanus will occasionally appear even after thorough prophylactic treatment, but is generally of a modified character, being localised and very rarely becoming general, while the mortality is very small. The onset of symptoms, whether local or general, calls for immediate and energetic treatment as outlined below.

(2) The mortality of tetanus varies with the time elapsing between infection and the onset of symptoms; the shorter this period the greater the mortality. Nevertheless every case, however mild, should receive the most complete antitoxin treatment. Tetanus toxin is fixed by the cells of the central nervous system which combination is broken down with the utmost difficulty if at all. The possibility of removing the toxin from the cells depends upon the relative concentration of toxin within the cells and that of the antitoxin without them. The greater the latter relative to the former the greater the chance of freeing the cells from toxin. It is thus evident that great concentration of antitoxin in the body is required if there is to be any hope of success. Small doses of antitoxin are therefore useless—huge doses must be given. The route by which they are given is of great moment. That the central nervous system is the site chiefly affected indicates the intrathecal route as offering the best chance of bringing large amounts of antitoxin rapidly into contact with the absorbed toxin. Whether it is in reality the best route is still somewhat doubtful but no harm can be done by employing

it, and it should, therefore, be used at the onset of every case. Lumbar puncture is performed and 20 to 25 c.c. of cerebro-spinal fluid withdrawn after which 15 to 20 c.c. of antiserum may be injected. The high potency serum (8,000 units in 10 c.c.) should always be employed for this purpose. Serum should never be injected without first removing some of the cerebro-spinal fluid and the amount put in should always be a few c.c. less than that taken out. When the operation is completed the foot of the bed may be raised to aid if possible the diffusion of the antiserum throughout the sub-arachnoid space. At the same time a large dose should be given intramuscularly. If the case be very severe and the spasms generalised the intravenous route may be employed. In this disease, as in diphtheria, many observers are opposed to this as being too dangerous. Antianaphylactic measures, however, as already insisted upon, render it absolutely safe and the increased rapidity with which the antiserum reaches all parts of the body adds very materially to the chances of ultimate recovery. In the later stages of the disease when symptoms are diminishing the subcutaneous route will prove efficient. In the writer's opinion the intravenous and intramuscular are undoubtedly and by far the best and most useful routes by which to introduce A. T. S. therapeutically and the latter should always be employed whatever other routes may be used secondarily.

The dose of antitoxin given cannot be too large. Where the disease is localised or comes on slowly after a long incubation period 16,000 units intrathecally and the same intramuscularly should be given at once, and 8,000 repeated every 4 or 6 hours afterwards. If the incubation period be shorter and the generalisation more rapid the amounts should be 16,000 intrathecally and 64,000 intramuscularly, with 8,000 every 2 to 4 hours afterwards. In the most severe cases such as those in which the disease is manifest in less than 4 or 5 days after infection and the spasms are general and frequent the same dose as above intrathecally (this is about the maximum possible at one time by this route); 50,000 to 100,000 intravenously and 16,000 intramuscularly every 2 hours afterwards. In all cases the subsequent intramuscular doses are continued until all spasm has disappeared. On the second day if there be no, or only slight, improvement another intrathecal injection should be given and some cases will require even a further intravenous dose. Massive doses are continued thus until a definite amelioration of the symptoms is effected after which intramuscular and subcutaneous injections are made until all spasm has disappeared. But even now it is not time to dispense with antitoxin and for some days after apparently complete recovery subcutaneous doses must be given. In this way a severe case will receive 400,000 to 500,000 units in the first 48 hours and 700,000 to 800,000 in the first week. Only a dosage on this scale offers a real chance of doing good and while even these will not save every case of tetanus yet they will very materially reduce the mortality of this disease. To give small doses is

only to waste time, to disturb and annoy the patient unnecessarily and uselessly and in the end afford him no help in his struggle against the malady. Still another route has been recommended and used for the introduction of A. T. S.—the intraneural. It is known that tetanus toxin passes from the site of infection to the central nervous system along the lymphatics of the nerve sheaths and it has been shown experimentally that intraneural injections of A. T. S. will block this path and prevent absorption of the toxin. Unfortunately in man a considerable amount of toxin will already have been absorbed before symptoms appear so that in most cases it will be too late for blockage of these paths to effect much. In some cases, however, it may be of some service to prevent further absorption and so give the antibody introduced in other ways a chance to deal with the toxin already absorbed. The great nerve trunks supplying the part in which the lesion is situated are exposed by operation and into the sheaths injected the required amount of A. T. S. Care must be exercised that the pressure within the sheath is not raised so much as to damage the nerve fibres; usually 2 to 3 c.c. will be as much as can be got in, *i. e.*, using the high potency serum, 1,600 to 2,400 units. This is a route not to be recommended and only to be employed after careful consideration of the case. Infiltration of the nerve sheath in this way has been known to result in paralysis and intractable neuritis and the possibility of this event must always be borne in mind. Intraneural injection must never be relied upon alone; more A. T. S. must always be given by one or more of the other routes.

Cerebro-Spinal Fever.

The antitoxin treatment of this disease has only lately come into its own. For long after it was first introduced opinion varied greatly as to its value and the facts were difficult to interpret. In fact at first it effected very little good and many observers gave their verdict against it. Latterly, however, as a result of greater knowledge of the specific virus of epidemic cerebro-spinal fever, consequent refinements in the preparation and administration of the antiserum and more extended use, opinion has changed and practically all are now agreed in attributing to it a very beneficent action. Unfortunately it is not yet as firmly established as is diphtheria antitoxin and cure does not so certainly follow its use but a very great amelioration of the disease is brought about by its employment.

Several therapeutic sera have been prepared for this affection by immunisation of horses. Originally meningococci were considered as belonging to a single type and the first sera were made from a single strain of the organism. This was soon found to be erroneous and polyvalent sera were prepared using a number of strains from different cases. Finally four distinct types have been described and numbered I, II, III and IV respectively in order of

the frequency with which they are encountered clinically: Each of these types produces its own specific antibodies. Antimeningococcal serum may be polyvalent or monovalent to one of the four types and since this coccus elaborates no true toxin and the antiserum is produced by the immunisation with the cocci themselves it is not an antitoxic serum but an antibacterial. No standardisation nor measurement of its antibacterial power has yet been found possible but some indication of its strength is furnished by its power of agglutinating its antigen. Generally speaking a monovalent serum is specifically agglutinating only to its homologous coccus, *i. e.*, an antiserum to a type 1 coccus agglutinates type 1 cocci and no others and so on; polyvalent sera, on the other hand, vary much in the types with which they react. Of the sera at present in the market that of the Lister Institute and that made by Flexner are the best and contain agglutinins to all four types: It is, however, by no means certain that this serves as an accurate measure of their therapeutic potency and it is probable, even certain, that individual samples of antimeningococcal serum vary greatly in this respect. Apart from the fact that the particular type of meningococcus responsible for a given case of meningitis is at first unknown and cannot be determined for at least 72 hours, there is the further difficulty that it is impossible to know how much antibody is being administered to the patient. Probably in time light will be thrown upon this matter and our knowledge become more complete. At the moment we are in darkness.

Theoretically, in every case the type of the causal virus should be determined with the least possible delay for previous to its determination a polyvalent serum can alone be usefully employed while once ascertained the homologous antiserum can be used in as large doses as practicable. This, however, has been found of little real importance and a good polyvalent serum is in every way as efficient and as reliable as a monovalent but it is essential to be certain that the serum is actually polyvalent to all four types of the coccus.

How then should one proceed when faced in practice by a case of suspected or certain meningococcal meningitis? This has been answered by Besredka (*Anaphylaxie et Antianaphylaxie*, 1917, p. 84) from whom the following suggestions with slight modifications are obtained.

(1) A suspected case. The only means of confirming the diagnosis is by lumbar puncture. This should therefore be immediately performed and 20 c. c. of polyvalent serum put in. Should there be any suspicion that the patient is in the anaphylactic state only 2 c. c. should be introduced at first after which the patient may be left till the diagnosis is made and 2 hours later or the following day the remaining 18 c. c. may be injected.

(2) A certain case with no indication as to the type of meningococcus responsible. Proceed as in (1) but in the second case (*i. e.*, where anaphy-

laxis is feared) the injection of 18 c. c. should be given without fail 2 hours after the first.

(3) A certain case occurring during an epidemic the type of the prevailing organism being known. In this case there is *a priori* evidence as to the type of the causal organism but no certainty. A mixture of equal parts of a polyvalent serum and a monovalent serum of the prevalent type may be given in the quantities and by the ways indicated for (2). Where the case is so urgent that (anaphylaxis being feared) a delay of two hours may materially diminish the patient's chance of recovery, recourse must be had to intravenous desensitisation (*vide supra*) followed at once by a maximum dose of antitoxin intrathecally. This variation and blending of sera was suggested and tried at first on, as has been said, theoretical grounds. In practice it is preferable to use a reliable polyvalent serum and persevere with it all through.

Lumbar puncture followed by intrathecal injection of antiserum is practised daily for three or four days in succession. If at the end of this time no definite improvement has resulted there is nothing more to be hoped for from specific treatment; if improvement be obvious, the serum should be given less frequently. It appears possible that intrathecal injections given too often at short intervals may do more harm than good. The period between injections is then steadily increased. Lumbar puncture and the removal of excess cerebro-spinal fluid is still, however, performed daily until definite amelioration of the symptoms is brought about when they may be omitted, to be resumed immediately should there appear the slightest evidence of a relapse. It is wise never to inject more than 20 c. c. at a time. There is no evidence that antiserum administered by routes other than the intrathecal in any way modifies the disease and these should, therefore, never be employed. As a rule clearing of the cerebro-spinal fluid, the disappearance of many and organisms from the cerebro-spinal fluid, the disappearance of pus cells from the cerebro-spinal fluid, the persistence of only a few leucocytes is sufficient to warrant the cessation of lumbar puncture and specific antiserum treatment.

The above course of treatment is that applicable to cases of declared meningitis but it has been pointed out that in its earlier stages meningococcal infection is a septicæmia and that during epidemics it is often possible to recognise cases in the premeningitic stage. Such cases should receive an immediate intravenous injection of 75 to 100 c. c. of polyvalent serum, repeated the following day if necessary. After that time if the patient has not definitely improved meningitis will have been established and the treatment will proceed as already indicated. The early discovery and treatment of this last type of case will very materially reduce the mortality of epidemic cerebro-spinal fever. No route other than the intravenous is of use in dealing with it.

Antistreptococcal Serum.

Numerous antistreptococcal sera have been prepared, none of which is really satisfactory and many are absolutely useless. Nor is the ultimate reason for this failure apparent. Why streptococci, alone of pathogenic organisms, should fail to provoke the formation of antibodies in the blood serum of immunised animals is not known, but such is the case. And yet sera possessing definite prophylactic and curative properties, when used in animal experiment, can certainly be obtained.

Streptococci isolated from various sites show morphological, cultural and bio-chemical differences; some are pathogenic, others non-pathogenic; but the importance to be attached to these characters is still in doubt. Are they mere accidental variations, all or any of which may be shown in appropriate circumstances by every strain of the organism or are they definite fixed characters indicating the existence of several species of streptococci? Bacteriologists are widely divided upon this matter and it is impossible yet to arrive at any conclusion. It is, however, certain that a given immune serum will not be equally effective in animal experiments against all strains of the coccus. The impossibility of ensuring that the proper antiserum is used in human therapy is one factor accounting for the poor results of antistreptococcal treatment.

Another and perhaps more important factor is our ignorance of the exact mechanism of antistreptococcal immunity. Many of the sera prepared are capable, in animal experiment, of preventing infection, some are capable of curing an existing infection, but none has any (or at any rate much) bactericidal action, few have any agglutinating power, and none appears to have any marked opsonising properties.

No worker has yet succeeded in obtaining a specific streptococcus toxin and it is probable that none exists. Some have reported the discovery of such but their results are open to criticism and even they have been unable to produce an antitoxin. It is thus quite impossible to state in virtue of what property antistreptococcal sera may be prophylactically or therapeutically effective.

Streptococci, even though pathogenic to man, are little or not at all so to laboratory animals but their virulence in the latter case can be enormously increased by a series of passages through them. Antistreptococcal serum, like all others, is prepared by immunisation of a horse which is brought about either by the natural virus, i. e., one which has not been modified in the laboratory, or by organisms whose virulence has been artificially raised in the manner mentioned above. They may be monovalent or polyvalent. There are thus four types of antisera:—

(1) Monovalent to a natural virus. Of these that due to Andrews and Horder is the best. They use a single strain of *S. pyogenes* distinguished

by certain cultural and bio-chemical characters. These authors incline to a belief in the multiplicity of streptococcal species and maintain that the majority of cases of human streptococcal disease are due to the *S. pyogenes*.

(2) Polyvalent to a natural virus. This is Besredka's serum.

(3) Monovalent to a virus of increased virulence; and

(4) Polyvalent to viruses similarly modified. None belonging to the last two classes has proved of any value in human therapy. In animals they have been found protective against streptococci of artificially increased virulence (i.e., against homologous organisms) but infective against natural viruses (i.e., heterologous organisms).

As with antimeningococcal serum no standardisation nor measurement of its potency has been found possible which is the more understandable in the case of antistreptococcal serum that it possesses no known property capable of standardisation or measurement. It has been employed in puerperal fever, septicæmia, streptococcal endocarditis, erysipelas, cellulitis, appendicitis, arthritis, etc. As in all similar cases the rapidity with which treatment is instituted is a main factor in success—that and the use of large doses. It is generally given intramuscularly or subcutaneously and for certain conditions these are the most suitable routes. For example, in cellulitis and erysipelas injection into the site of inflammation gives the best results. For other cases, however, absorption by these routes is probably too slow and in endocarditis, septicæmia, etc., the writer is decidedly of opinion that if the serum is to be used at all it should be given the best possible chance to exert its full action, i.e., it should be introduced intravenously.

When the case is first seen give at once 50 to 75 c.c. of the serum, repeated, if necessary, later the same day. In any case another dose should be administered on the following day and so daily until it is evident that the infection is mastered as shown by fall of temperature to normal and resolution of any local lesion if present. In severe cases where the intravenous route is used, after the first two or three doses it will generally be unnecessary to continue these injections and intramuscular injections will thereafter be sufficient. After the first two doses the amount injected daily may in most cases be diminished to from 15 to 30 c.c. according to the severity of the disease.

The recorded results of this treatment vary enormously. Some brilliant successes have been reported, but the general feeling appears to be against the value of antistreptococcal serum and the fact probably is that little or no advantage results from its use.

Andrews and Horder recommend the simultaneous treatment with anti-serum and vaccine. This complicates the result as it is impossible to apportion any success between the two agents. Moreover it seems very unlikely

that vaccines will be of any service in overcoming an infection which has already gained access to the blood stream. The method is closely analogous to that advocated by Besredka in his sensitised vaccines (*vide infra*).

Dysentery.

Of the two types of this disease the amœbic form is not susceptible of treatment by an antiserum but this method has been tried in the bacillary forms which therefore are alone considered here. The pathogenesis of bacillary dysentery is on a firmer basis than the last infection in that the causal bacilli are known to form numerous species (Shiga, Flexner, Hiss, etc.). Of these *B. dysenteriae* Shiga alone produces a toxin. A number of antisera differing in their mode of preparation and their biological properties have been prepared—some monovalent, others polyvalent. The latter are obtained by immunisation of a horse with strains of all the dysentery bacilli and are antibacterial in their action. The former are anti-Shiga, some being antibacterial only, others antibacterial and antitoxic.

The potency of the sera has been measured as in the case of tetanus but such measurements are not used clinically, the dosage being regulated merely by the number of c.c. of the serum given. Before being put on the market all sera are tested biologically and any that reaches 1/2000 or more (Roux and Behring's nomenclature) is considered suitable for use in man.

The usual route for administration is the subcutaneous, and in mild cases 20 to 30 c.c. should be given. As the case is more severe in character so the dose must be larger till in the most severe cases 80 to 100 c. c. are injected. In the last the intravenous route may be used with advantage but not more than 50 c. c. should be given at one time. Injections should be repeated daily until the stools become normal but must not then be discontinued. When this has been brought about doses may be progressively diminished and the interval between them increased until the patient has been on ordinary food for a week during which time there has been no diarrhoea nor passage of mucous or blood.

It seems doubtful whether the polyvalent sera offer any advantage over the monovalent—quite as good results have been reported in the treatment of Flexner dysentery with Shiga monovalent serum as with a polyvalent. But the value of either is not yet absolutely established and it is not everybody who has used them that is convinced of their efficacy.

Cholera.

Much has yet to be learned concerning the pathology and pathogenesis of this disease. The causal organism—*vibrio cholerae*—is well known but some of its properties require further elucidation. Thus, for instance, the question whether it forms any true toxin is still in dispute. In cholera of

human beings the vibron remains localised to the intestine but many of the symptoms of the disease are due to a toxæmia. The vibrio cholerae is always present in every case of true cholera but there is reason to doubt if it alone is responsible for all the manifestations of the disease. Various observers have swallowed pure cultures of the vibron without suffering subsequently from cholera. It is also certain that in artificial media numerous organisms if associated with cholera increase the vitality and resistance of the latter. And finally it is equally certain that in cholera some of the normal flora of the intestine take on an increased virulence (e.g., *B. coli communis*) and possibly themselves become pathogenic. It therefore appears likely that clinical cholera is due to a summation of effects, viz:—of the *V. cholerae* in symbiosis with other organisms normally present in the intestine but having attained an increased virulence or even become pathogenic.

Some workers have reported the preparation of a true toxin elaborated by the *V. cholerae* but the question is not as yet finally settled. The toxæmia seen clinically may well be due to the pathogenicity of associated organisms.

Until these problems are solved a rational serum-therapy is impossible. In the meantime, however, the antiserum that is available may be given a trial. Up to the present it has been used in but a very few cases, insufficient to warrant any conclusions as to its efficacy. Further trial must be made to decide this. Pfeiffer's serum is certainly not antitoxic but only bactericidal and therefore useless. The serum of Metchnikoff, Roux and Taurelli-Salimbenni is claimed to be both antitoxic and antibacterial and it is that which should be employed in man. No estimation of its potency has yet been made and like antistreptococcal serum the dose is measured merely by c.c. The same first principle is applicable here as elsewhere—early treatment with large doses. The writer has had no personal experience of the use of this serum, but judging by analogy, is of opinion that hitherto those using it have erred on the side of using too small doses. He would recommend a first injection intravenously of 100 to 150 c. c. or even more in severe cases, repeated the same day if necessary, and in any case the following day, and continue the treatment with somewhat smaller intramuscular doses until the disease is definitely overcome.

Plague.

This is a bacterial disease in which toxæmia plays a very unimportant, if any, role. *B. pestis* produces but very little toxin in cultures. Two antisera have been prepared—one, Yersin's, being antibacterial only, the other, Rowland's, antibacterial and antitoxic. They are probably equally efficient and should always be used, if possible, in the treatment of plague. Anti-plague sera, perhaps more than any other, have been handicapped by use in too small doses. Large amounts should be given at the earliest

possible moment. Also it has very commonly been given subcutaneously. This is too slow a method. The intravenous route should invariably be used, at any rate at first, possibly in conjunction with the former. Thus a case should receive 75 to 100 c. c. intravenously and 100 c. c. subcutaneously or intramuscularly when first seen, the same doses being repeated within 12 to 24 hours and then daily until the temperature falls to normal. In less severe cases it will often be sufficient to give after the first two intravenous doses daily injections of 30 to 50 c. c. subcutaneously as long as there are any symptoms. The greater the interval between the onset of the disease and the first injection the larger must be the dose of antiserum. In early and mild cases not less than a total of 100 c. c. should be given while in severer and later cases much larger amounts are called for.

The prophylactic dose is 15 to 20 c. c. but the immunity produced is fleeting and lasts only 10 to 14 days. Vaccination is far more effective.

The results hitherto obtained by this treatment have been extremely encouraging. Some observers have unfortunately reported poor results but probably on account of insufficient dosage. Employed as indicated above it holds out great hopes of a very greatly diminished mortality and the help of serotherapy should no more be spurned in this than in the case of diphtheria.

Snake Bite.

All snake venoms contain two actively toxic principles—a neurotoxin which acts upon the nervous elements and a hæmorrhagin whose action is upon the blood. The venomous snakes belong to two classes, the colubridæ and the viperidæ. The venom peculiar to each class is common to all the species of that class and differs from that of the other class only in relative proportions of the two toxic constituents. In the colubridæ the neurotoxin is in excess and the clinical picture following a bite by one of these snakes, e.g. the cobra, is predominantly nervous. The venom of the viperidæ e.g. the rattle snake, on the other hand, possesses excess of hæmorrhagin and so produces a clinical condition in which circulatory disturbances are most marked. The first antivenom prepared was obtained by immunisation of a horse against cobra venom and such sera are of very great potency. To obtain an antitoxin to a viperine venom has been found to be accompanied by very great difficulties and for therapeutic purposes has been abandoned. Nor has this proved any great loss since Calmette has shown that his cobra antivenom is equally effective against all snake venoms of whatever origin. Whatever snake, therefore, is responsible for the bite the patient should always receive immediate treatment with Calmette's serum. And since death occurs within 3 to 12 hours according to the kind of snake, its physical condition at the time (whether hungry or gorged, active or sleepy) and the directness and severity of the stroke it is evident that no time is to be lost. In conse-

quence there is only one route of injection to be recommended, viz., the intravenous, and the amount introduced should not be less than 400 c.c. At the same time the part touched should be ligatured to prevent circulation of more poison and the wound excised and well swabbed with potassium permanganate or, better still, filled with crystals of this substance.

The value of antivenom in the treatment of snake bite is as great as that of diphtheria antitoxin in the treatment of diphtheria and as certain. No other method of treatment offers the same chances of success.

Sensitised Vaccines.

Allied to that of sero-therapy is treatment by sensitised vaccines introduced by Besredka. A culture is obtained of the organism with which vaccination is to be carried out and suspended in excess of the homologous antiserum (e.g. staphylococci in an antistaphylococcal serum). The suspension is left for three hours at 37° C. and then centrifuged. The supernatant fluid is pipetted off and the deposited bacteria washed three times in sterile normal saline. By this method the bacteria will have absorbed a certain amount of antibodies and vaccination will be carried out with the virus and the specific antibody at the same time. It is claimed for the process that the reaction following inoculation is less marked, that there is less or no negative phase and that immunity is more rapidly effected. It is somewhat doubtful if these advantages really ensue. At any rate in the treatment of disease it is unlikely that they or ordinary vaccines will in most cases be beneficial. For prophylaxis ordinary vaccines are efficient and the sensitised have little in reality to recommend them. It is even possible that they are less effective.

It has now been seen that a number of human diseases have already been treated by specific antisera and the list may yet be added to in the future. Of the antisera actually in use some have fully justified their employment and are amongst the physician's most valuable remedies. Others have still to attain to that proud position but only by extended trial can they do so. In all cases any possible adjuvant action must be taken at the same time as the serum is given, e.g. the local treatment of the throat in diphtheria, of the lesion in snake bite, the opening of any abscesses in streptococcal infections, etc. It is unwise to ask too much of serotherapy. And finally the bedrock principle—earliest possible treatment with adequate doses—cannot be too often and too strongly emphasised.

OUR CONTEMPORARIES.

MEDICINE.

War Nephritis,

BY

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IN the present war there have been a large number of cases of nephritis which in several ways have been unusual.

Of course, wherever we get a great many individuals grouped together and they are carefully watched medically, there are bound to be a certain proportion of examples of inflammation of the kidneys seen, and such was the case during the first few months of the war. The writer was in charge of the Medical Division of a British general hospital in France in the winter of 1914-1915 and there were always a few cases of nephritis in the wards, but they were in no way peculiar. In the spring of 1915, however, examples of the disease became very common and during the summer they were so numerous as to attract special attention. In fact, so frequent did they become that a veritable epidemic of the disease might be said to have occurred. This epidemic continued all through last winter although in perhaps a slightly reduced form. It occurred in the German and Austrian armies in the same way as in ours.

A good deal has been written on this subject in the last few months and all agree in considering the disease to be peculiar in many ways, although probably few would go so far as the correspondent of the *British Medical Journal*, in France, who refers to it as a "new disease" (*Brit. Med. Jour.*, 1915, ii, p. 109). Such epidemics have occurred before, notably during the American Civil War, but they do not necessarily occur in war, as is shown by the fact that the South African War was noted as being peculiarly free from the disease.

The term "trench nephritis" has been commonly used to designate the condition, but, as our figures—as well as those of others—will show, the disease very commonly occurs in soldiers who have not been in the trenches at all. Probably a term less open to objection is the one at the head of this page, which was, I think, suggested by the *British Medical Journal* correspondent in France last January. The term "trench" has been used in connexion with nearly every disease that has occurred in this campaign, and usually with very insufficient reason. Probably the only good use of the word is in the disease called "trench foot."

This communication is founded upon the study of the two hundred cases of nephritis that occurred in a Canadian General Hospital in France during a year. They form a part of the immense series upon which Sir John Rose Bradford reported in the *Quarterly Journal of Medicine* of last January. All cases of the disease occurring in France were as a military routine reported to him, and ours fully support all the findings that he records.

Etiology. It is a common belief that nephritis is usually due to a "chill" but in the form of the disease under consideration this does not seem to be the case. Thus, during the first winter, when the condition of the trenches was at its worst and the soldiers were exposed for days on end to constant cold and wet—at the time indeed when the hospitals were largely busy with the care of thousands of cases of "trench feet"—cases of nephritis were uncommon. Then, just when the weather conditions were improving and the warm and comparatively dry climate of spring had come they occurred in increasing numbers and this continued all through the summer. When, again the winter had set in, although by this time the men were much more comfortable in the trenches—but still in surroundings of mud and rain that would horrify a civilian—the epidemic did not increase, but if anything lessened. So that, although believing as we do that a case of nephritis which is nearly well may be caused to relapse by a chill and should hence be kept for a long time in an equable temperature, it is evident that "chill" cannot be considered as a cause of the primary disease. Furthermore, if any additional evidence is necessary, our series shows that while the disease was rather more common in men who were serving in the trenches, still very many cases were soldiers who had not been in the trenches at all. Thus, of 192 cases 123 were from the trenches, but 69 were from the positions away from the trenches. Of course, this does not quite express the true proportion, as far more men are behind the trenches than in them, but still the number of cases that occurred away from the trenches is far too large a one to allow of the conclusion that the disease is in any way peculiar to trench life.

Some of the cases (twelve in our series) give a history of previous renal trouble, but it is evident that the disease is usually a first attack. In several instances the patients had had a previous attack in France and had completely recovered only again to fall victims to the disease.

Age does not appear to be a predisposing cause in any way. The ages of our patients varied from seventeen to fifty-five, and while most of the cases occurred in young adult life this can be fully explained by the fact that most soldiers are of that age. Length of service and duration of service in France appear to have no bearing; many of our patients had only been a month or

two in the country when they were attacked. Previous occupation and former diseases also seem to have no bearing.

As regards alcohol, 83 out of 152 of our cases gave a history of taking alcohol, but all were put under this heading who took any alcoholic drinks at all and most of them no doubt were moderate drinkers.

Very few of our patients gave a history of syphilis, but such records are of little value in soldiers. No Wassermann reactions were tried for, but Dr. Langdon Brown in a series of fifty-six cases of this nephritis found the reaction positive in 33 per cent., which is a much higher proportion, according to him, than prevails in the army generally. (*Lancet* 1915, i, p. 391.)

The soldier's diet has been blamed for the disease, but although the protein element is high (180 grams) it cannot be the cause. It would act by producing an intestinal toxæmia and Mr. Mackenzie Wallis' observations (quoted by Dr. Langdon Brown) are definitely against such a toxæmia in these cases since he found neither an increase in the ethereal sulphates nor the presence of urobilin in the urine. That the diet is in some way to blame or is at least a contributing cause is rather suggested by the fact that the Indian troops in France are almost immune to the disease and yet their surroundings are in every way the same, but the diet is quite different. The German and French troops, as mentioned, are said to suffer in the same way as the British. The water supply has been suspected as being a cause, but this suspicion receives little support as the supply is from such various sources, is sometimes chlorinated and sometimes is not so. Some have suggested that the condition may be due to metallic poisoning from the large amount of tinned foods used, but no metal has been found in many samples of urine examined. Also, an apparently similar epidemic occurred among the American troops in the Civil War and probably there were few tinned foods used in those early days. I have not seen excessive use of tobacco suggested as a cause.

The epidemic nature of the disease would naturally suggest some infection as the underlying cause. Some have believed that this infection may be a suppressed scarlet fever, but it is impossible to believe that thousands of cases of suppressed scarlet fever could occur in the army without a much larger number of the ordinary type of this infection being present and such has not been the case. Again, no case of ordinary scarlet fever occurred among the staff in our nephritis wards so that one would have to admit of a noncontagious form of suppressed scarlet fever, which makes this theory still more unlikely.

A very interesting record is given by Dr. F. F. Chandler (*Lancet*, 1914 i, p. 461) of an epidemic of albuminuria which occurred in his battalion

Case after case came to him with slight fever and often herpes labialis and occasionally oedema. He found albuminuria in many. The cases usually soon cleared up but many were sent to the field ambulance and no doubt most of these reached a base hospital. He considered the epidemic to be one of influenza.

Sore throat is not a common antecedent of the disease. Bronchitis is very common, occurring in 86 per cent. of our cases, but it seemed to be rather an accompaniment than a cause of the disease. Again, Sir John Rose Bradford states that bronchitis is very common amongst the Indian troops and they have almost no nephritis.

Numerous attempts have been made to isolate an organism from the blood in these cases but with no certain results. Various bacteria have been occasionally recovered and grown but apparently nothing specific, and in the great majority of instances the blood cultures have been negative. It may be, as suggested by Dr. Langdon Brown, that the infection is of short duration and has generally disappeared by the time the patients have reached a hospital where it is possible to do such special work. Thus, in our cases the average time before the patients were admitted to our hospital was 9.6 days. No organism was recovered in a considerable number of cases in which blood cultures were made. Again, it has been suggested that a bacilluria may be the cause, but although occasionally a bacilluria is found to be present, usually it is absent. The type of nephritis present in the few fatal cases that have come to section has been both glomerular and tubal with some interstitial changes and white cell infiltration, all of which would suggest that the condition is due to an infection but so far the nature of the infection has eluded investigation. The most constant infection that is present in soldiers is undoubtedly pyorrhœa alveolaris but I cannot say that this infection was more marked in our cases of nephritis than in any of the others. Still on the off chance of it being at least of some influence we had, during the last six months that I was in France, every nephritic patient subjected to dental treatment.

It has been suggested that the infection is ultramicroscopic, but so far the evidence of this is only of the negative kind, although it should be mentioned that Mr. Mackenzie Wallis was able to produce in rabbits a definite illness occurring eight days after the injections of urine prepared so as to be free from bacteria, but containing any filter passer present. The rabbits, however, did not suffer from nephritis.

Symptoms. All the classical symptoms of nephritis may occur in these cases but in rather different degrees from what they do in cases seen in civil life. We will take the symptoms in their order of frequency in our series.

1. *Oedema.* Oedema of the face occurred in 96.3 per cent (184 out of 191 cases) and was very often the first thing noted. Frequently the history was that the patient had left quite well until told by his fellows that his face was swollen. In many instances the oedema was so marked that the eyes were more or less closed. It always cleared up with great rapidity, although a good many cases had to be sent to England, while it was still very evident.

Oedema of the body and limbs was noted in 89 per cent. (166 out of 187 cases) and was occasionally marked. In a few cases there was evident ascites and often some fluid in the pleuræ and oedema at the bases of the lungs. In no instance did the collection of fluid in a cavity require removal by mechanical means.

2. Headache was noted in 96.5 per cent. (182 out of 191) and was often severe. It was occasionally associated with considerable dimness of vision. In a few of the cases examined ophthalmoscopically retinal hæmorrhages were seen.

3. Nocturnal dyspnoea occurred in 78 per cent. (125 out of 160 cases) and often necessitated the patients being propped up in bed. A similar dyspnoea would also be noted in the daytime. As regards the nature of this dyspnoea, Mr. Trevan (quoted by Dr. Langdon Brown) found the alveolar CO₂ normal in three and reduced in two from normal 5 to 3 per cent. "Since dyspnoea due to acidosis is always associated with reduction of alveolar CO₂ and uræmic dyspnoea is of this type, it would appear that the shortness of breath was not always associated with acidosis, uræmic or otherwise." It seems more probable that the condition is rather due to the oedema of the lungs, which is so constantly present.

4. Dyspnoea on exertion was present in 125 instances of the 160 cases in which this was noted (74 per cent.) but of course was a more indefinite symptom as it so much depends upon the amount of exertion and is a matter of history rather than of observation. Most of the patients were not in a condition upon arrival to permit of our trying for this symptom.

5. Cough and bronchitis were present in 76 per cent. (135 out of 177 cases) but were not usually severe enough to give rise to much distress. The sputum was nearly always free and watery. Signs of bronchitis were nearly always to be detected and frequently, as mentioned, many fine crepitations at the bases suggested oedema of the lungs.

6. A raised blood pressure was noted in 49 per cent. (77 out of 153 cases) of cases on admission. This refers only to cases in which the systolic pressure was 160 mm. and above. The diastolic pressure was noted as 100 mm. or above in 50 per cent. (77 out of 153 cases). Both the pressures were taken by the auscultatory method, the Lycos instrument being used.

In some cases the pressure had fallen to normal in a few days. Dr. R. G. Abercromby (*Lancet*, 1916, i, p. 878) has noted the systolic pressure by the palpatory method in many cases and finds that it is always raised at some period; that it is higher in the afternoon than in the morning, and that as the patient improves it falls often by crisis. He states that the pressure usually diminishes *pari passu* with the amount of albumen, but not always. One would suspect that in those cases where the pressure does not fall as the albumen disappears we were rather dealing with cases of acute nephritis implanted on a chronic condition. We frequently noted that apparently the most toxic cases were not the ones that had the highest pressure. Thus five out of the twelve cases that had fits are noted as having a systolic pressure below 160 and in two instances it was respectively 120 mm and 110 mm.

7. The aortic second sound was noted as being accentuated in 66 per cent. (87 out of 143 cases). It did not seem to be a necessary accompaniment of high systolic pressure and in twenty-seven cases where it was noted as being present the pressure was less than 160 mm., while on the other hand in thirteen instances where the systolic pressure was 160 mm. or above, it is noted as being absent. This point we have often observed in civil practice.

8. The radial vessels were noted as thickened in 29 per cent. cases (35 out of 121 instances).

9. There was more or less vomiting, either before entering the hospital or while there, in 35 per cent. of the cases (61 out of 174). Sometimes it was very persistent and there was also much nausea.

10. The quantity of urine in the twenty-four hours varied enormously, depending chiefly apparently on the stage of the disease. Many cases on admission had almost a complete suppression but in a few days a stage was reached in which the quantity would suddenly greatly increase and with the diuresis the oedema would rapidly disappear.

In some the twenty-four hour quantity was large even on first admission and here the stage of scanty urine was probably over before the patients reached us. In some this desired diuresis had not appeared before the patients were evacuated to England. Albumen was still present in the urine of 174 out of 188 cases on admission (nearly 93 per cent.). The ones in whom it was absent on admission were diagnosed by the presence of oedema, etc., and had come down the lines of communication with a diagnosis of nephritis and no doubt had had albumen at first. As regards the quantity, it is recorded on our list as large in seventy cases, moderate in fifty cases and small in fifty-four cases. In many cases it completely cleared up in a few days while in many it was still present when they were sent to England.

There was no relation between the amount of albumen and the tendency of fits.

Renal casts, usually granular and hyaline, were noted in 70 per cent. of the cases. Sir John Ross Bradford, in his communication already referred to, only took the cases that had casts as undoubtedly nephritic, but in many of those in whom they were reported as absent in our series the diagnosis seemed quite likely from the presence of other signs, such as oedema and nocturnal dyspnoea, etc.

Red blood cells were noted as being present in 103 out of 177 cases (58 per cent.) and white blood cells in 46 per cent. (64 out of 138 cases.)

In a very few instances blood was present in the urine to the extent of rendering this smoky or even red in colour,

11. There was often some fever on admission, the temperature being noted as 100° or above in 40.5 per cent. of the cases (74 out of 183), but it was never high. No acute complications such as pleurisy or pericarditis were noted.

12. Fits occurred in 6 per cent. of the patients after their admission to hospital (12 out of the 200 cases) and in several instances were very severe and the patients were more or less unconscious for hours. They all recovered.

A fatal issue occurred in only one case and here the post-mortem examination revealed typical granular contracted kidneys. This patient was thirty-six years of age and there was a history of previous kidney disease two and a half years before. He died in uræmic coma and did not have convulsions. The blood pressure on admission was 160.60 mm and he had been on the sick list for forty days before he reached us. He had only been two months in France and had not been in the trenches at all. He was said to be a teetotaler.

Treatment. The routine treatment of our cases was as follows:—

They were kept in bed between blankets in a ward which was carefully heated to between 60° and 65° Fahrenheit. The diet in all cases at first was "plain milk", which means six pints of milk in the twenty-four hours. Otherwise the fluids were restricted. In the slighter cases, and in all of them as they improved, the diet was soon supplemented, chiefly by the addition of bread and various vegetable foods.

A dose of one drachm of the compound jalap powder was usually given on admission and after that the bowels were kept freely open with concentrated salines. If any uræmic symptoms, such as vomiting, headaches or fits supervened, hot packs were freely used and they seemed to be of much value. Such hot packs necessitate a good deal of extra work and for this reason as

well as with the object of guarding these patients against chills they were always segregated in a special ward, and here we had a larger staff of orderlies and nurses than in the average medical ward.

When suppression of urine was present dry cupping over the loins and then hot fomentations seemed useful.

When fits occurred and they were severe, in addition to hot packs and extra purging, we bled the patients freely and this seemed to be very effectual in relieving the underlying toxæmia. As already mentioned, none of these cases died.

Pilocarpine was used occasionally to increase the sweating, and the saline diuretics were frequently given.

Prognosis. The ultimate prognosis of these cases could be better judged by the physicians whose care they came under after reaching England. Many of the slighter cases would clear up in a few days and, as said, some seemed to have already practically recovered before they reached the base. These slight and apparently recovered cases were often not sent to England at all in the summer, but to convalescent camps in France, and no doubt soon were returned to their units for full duty. But when the weather became cold and wet most of even the apparently recovered cases were evacuated to England.

Conclusions.

1. The epidemic of nephritis which has occurred so generally amongst the European troops in the present war is peculiar in various ways and differs from the ordinary nephritis seen in civil life (a) in its epidemicity, such epidemics have occurred in other campaigns, notably in the American Civil War, (b) in the low mortality in spite of frequent severe symptoms.

2. The disease appears to be due to some infection, local or general, the nature of which has not yet been determined, but probably it is of the ultramicroscopic variety.

3. Nocturnal dyspnoea is an early and very constant symptom, far more so than in nephritis of the ordinary varieties.

4. The prognosis is much better than in acute nephritis of the ordinary types. The great majority of the cases soon clear up completely, but some drift into a chronic and persistent condition.

The cases in our series were under the immediate care of Captain (now Major) C. E. C. Cole; Major (now Lieut.-Colonel) A. J. Mackenzie and Major H. C. S. Elliot, and any value that this communication may have is chiefly due to their conscientious work as well as that in the Pathological Department of the hospital under Captains Duncan Graham, McKee and Leeming—*C. M. A. Journal*.

The Gluteal Sign in the Diagnosis of "Sciatica."

Felik Rose (*Medical Press*, October 9, 1918) alludes to the extreme frequency of "sciatica" among British troops, pointing out that it is a disease which is easily simulated, and that many cases are met with in which it is difficult to make a satisfactory diagnosis. He then describes an easily elicited clinical sign, which he has found in the great majority of cases of true sciatic neuralgia and traumatic irritation of the nerve trunk. He calls it the gluteal sign. It consists of an exaggeration of the gluteal reflex on the affected side. To elicit the sign, the patient is placed flat on his abdomen and he is directed to relax all muscular tension of the buttocks. The practitioner then taps lightly with the hammer ordinarily used in testing the tendon reflexes on the area corresponding to the lateral margin of the sacrum from the second to the fourth of its constituent vertebræ. The percussion thus applied produces in the muscular bundles of the *gluteus maximus* which are attached to those sacral segments, a fascicular contraction that is readily visible under the skin, and is obviously of a very different form from the globular contraction characterizing voluntary effort. The test should be carried out on both sides of the body. In every case in which this sign has been present Valleix points and the sign of Lesegue have co-existed. In these cases the sign has been noticed to disappear conjointly with the subsidence of the neuralgic pains. On the other hand, the sign has never been found in cases submitted with a diagnosis of sciatica, but really the subjects of contracture of the periarticular hip muscles—*M. J. of Australia*.

OBSTETRICS AND GYNÆCOLOGY.

The Relative Value of Twilight Sleep.

SCOPOLAMINE-MORPHINE NARCOSIS IN CHILDBIRTH.

A few years after its introduction by Gauss in 1906, this form of treatment was heralded by the lay Press with such acclamation that, even to-day, a large percentage of the general public take an extraordinarily optimistic view of its application, and in some quarters withholding of the method is still viewed as a typical instance of supposed lack of enterprise and initiative on the part of the medical profession of this country. There could not be a grosser misrepresentation of fact. Throughout many journalistic discussions and attacks, not only conducted with but very superficial knowledge of the subject, a tendency has arisen to idealise, to take extreme standpoints, and to try to fit innumerable instances, exceptional in either their success or their disaster. The matter was not realised as one upon which expert obstetricians might disagree, but rather considered as an example of a semi-secret method, absolutely safe and efficient in certain

practised hands on the Continent, but which was unfortunately barred to most of the women in Great Britain through expense or professional obtuseness.

But nothing could be more misleading to the potential mother who dreams with varying dread of her approaching trials. Although we do not know the exact extent to which these drugs are in use by general practitioners throughout the country, yet it is certain that such means have been thoroughly tested and pronounced upon by our greatest experts, and a medical man once in possession of their results can readily explain to a patient the true perspective of the situation. His own judgment must here, as on so many occasions, decide what is to be suggested; she must make a guided choice and it is with a view to aiding such a joint conclusion that these few notes are penned.

AN OUTLINE OF THE METHOD.

It is essential to understand exactly what is meant by "twilight sleep." It is neither analgesia nor anæsthesia but a condition of amnesia. Sensation remains present though in diminished degree; the patient feels the pains of the uterine contractions, frequently she moans and in other ways shows that she is suffering, but these painful stimuli are not recorded in the memory cells of the brain, for after the influence of the drug is removed, she will maintain that she never experienced them.

The first effect of scopolamine in correct dosage is a pronounced weariness associated with muscular relaxation, and this stage is sometimes followed by one of motor-restlessness, but soon the patient passes into a sleep from which she is awakened by each successive pain. At this point the pains are clearly perceived both objectively and subjectively but the amount of suffering they cause is in most cases diminished. In the majority of patients a further phase is then produced, and while they are under the influence of the drug sense impressions, although perceived, are no longer registered. Perception is not abolished, but "apperception"—the power of storing the perceptions—is lost.

It must be remembered, therefore, that precautions for the reduction of sensory impulses coming from outside are, in these cases, a particularly necessary provision. The labour-room must be kept absolutely quiet, darkened, and with some non-sounding material applied as a floor covering. The patient's ears should be plugged with cotton-wool and her eyes shaded, while all visits and examination are conducted with the least possible disturbance. A nurse specially experienced in the treatment must be in constant attendance and professional aid must at all times be within the easiest reach; in other words, local conditions of an ideal standard are essential. Also it is clear that no standard dosage can be adopted since patients vary greatly in

their reaction to the drug; if the amount be too small, amnesia will be incomplete, and there may remain "islands of memory" from which the woman can reconstruct the whole picture; if it be too great the most dangerous poisonous effects are produced in both mother and child.

COMPARED WITH THE IDEAL.

Perhaps the easiest way to review the efficiency of the method is to draw a brief comparison with the properties of an ideal narcotic for spontaneous child-birth as enunciated by Gauss in his original paper. Let us take them in his sequence.

1. *There must be a marked reduction of pain.*

This object is undoubtedly achieved in all but the most unsuccessful cases.

2. *It must be free from unpleasant after-effects, or if such effects are inseparable from the action of the drug, they must be harmless to the patient.*

Here again, provided the question refers to the mother alone, it is hard to find fault. When dealing with labour, a process fraught with so much coincident unpleasantness for the woman, it is difficult to ascribe any of the after-effects to the drugs themselves. After labour most patients sleep for a satisfactory period, while the puerperium and stage of strength recovery do not appear to be at all adversely affected. Also 75 per cent. of them are said to be able to nurse their children, a very good proportion under modern conditions, suggesting that lactation comes under no unfavourable influence.

3. *The normal process of labour must not be interfered with during the dilatation of the cervix, the birth of the child, the separation and expulsion of the placenta or the arrest of hæmorrhage.*

In all cases there seems to be a fairly constant diminution in the strength and frequency of the contraction after the first dose, while later they tend to recover in spite of further scopolamine injections. Nevertheless, the fact makes a strong contra-indication for the method in primary uterine inertia. Also the frequent absence of voluntary bearing-down efforts tends to delay matters considerably. Of the second stage, one is justified in saying that in nearly all cases it is distinctly prolonged, especially in primipara and due to the above mentioned causes or their complications. One direct result of this is a markedly increased forceps rate, not only from the normal cases which fail to deliver themselves spontaneously, but also the common non-rotation of occipito-posterior positions in the absence of effort by the patient. And lastly, of the placenta: the third stage is sometimes quite normal but often prolonged and somewhat unsatisfactory.

4. *The child must not be injuriously affected in intra-uterine life; after delivery there must be no interference with the initiation of its physiological functions or with its later development.*

One cannot find any extensive observations on the foetal condition, but most records of the heart-beat show little departure from those usual in protracted labours, and practically all the still-births occurring can be readily accounted for by circumstances other than the drug effects. Yet apart from forceps cases, a large number are born in a condition known as oligopnoea and this is stated as undoubtedly due to the combined action of the morphia and scopolamine. The child usually gives a cry as it is born but then makes no further attempt at respiration. It becomes first blue, then pale in colour; the heart-beat falls in some cases to 80 per minute, and the action often becomes irregular. Alarming enough at first but if the state be not considered as white asphyxia, and the child merely covered and kept warm, in favourable cases in ten to twenty minutes slow and shallow respirations commence, become deeper, and in a short time the normal rhythm is established.

PERCENTAGE OF SUCCESS.

Such, then, is a rough sketch of the process, and it is unnecessary to point out its advantages for the patient's own sensations if fortune favours her with complete amnesia. Given only partial success, almost the whole of these are at once lost. In fact a great many of the "twilight sleep" cases only obtain an approximation to loss of memory by the frequent custom that chloroform is employed to mask the pains at the birth of the head. Supporters of the method give each as their best figure for complete amnesia 80 per cent., but this includes the chloroform cases. Without this all-important adjunct the percentage falls to 50.

There is a high proportion of failures, partial or complete, of all that the woman herself aims to gain, namely, an absence of memory for the event, and it is imperative that she should realise that a great deal is being staked on an uncertain chance. However normal her case at the start, she adds undoubted risk of her own life and a greater of that of her child.

DEMANDS UPON ATTENDANTS.

The demands made upon the doctor himself are tremendous; the patient must be closely watched and not left alone for a minute whilst under the influence of the drug. She has to be seen at intervals of an hour over periods sometimes extending the whole clock round; the attendant must be prepared to remain with her during a second stage of four or five hours and even then may be called upon to wait another two or three when the birth is over. Such conditions are possible in a hospital where relays of skilled assistants are available, but almost out of the question in the average private house

and much more training and experience than the ordinary maternity nurse can command are needed. It cannot be too strongly impressed that with prolongation of labour, the possibilities of introducing abnormalities into otherwise simple births are tremendous. The drugs, once injected, are largely out of the doctor's control—there being little chance of undoing any harm that may have been done—and they come under a very different category to the ordinary mask of the anaesthetist.

General Adoption of System Condemned.

It would be most unfortunate if the impression persist that there is not a considerable interference with the normal course of labour in all instances or that its skilled administration is entirely without risk, for this much the most enthusiastic specialist will at once admit, although he may prove that in his own or other competent hands the danger is reduced to a minimum.

It is obvious from all reliable records in this country that the treatment tends to produce uterine inertia, and to raise the forceps rate without increasing the morbidity rate and the danger to the mother and the child.

The fact has been proved beyond question by various observers and in itself is sufficient condemnation of the general adoption of so-called "twilight sleep" when we are at a point in the nation's history where infant welfare and the care of a coming generation are so universally important.—*The Hospital.*

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Advertisement Rates per page per month Rs. 7—8 or 10 s.,
Half page Rs. 4—8 or 6 s., a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

The Prognosis in Surgical Affections of the Urinary Apparatus.



ALTHOUGH in reality the clinical prognosis of a given affection differs from its operative prognosis, it is easy to understand that there is a certain affinity between the two and that in any case the two are often very difficult to establish. Operation is not everything, for, after all, it is only a mechanical act, but it is much more interesting and useful to know in advance whether the intervention is likely to prove successful and within what limits it is justified just as it is necessary for an engineer to know how to prognosticate the quality and the properties of a block of steel. Now there is a calculation of probabilities based, as in pure arithmetic, on a series of factors and contingencies of which the mutual coordination and subordination enable us to arrive at a fairly trustworthy approximation.

In these columns, we are not going to describe the means of appreciating the prognosis in surgical affections of the urinary apparatus such as the radiography, the cystoscopy, etc. We shall only limit ourselves to some of the general elements on which the prognosis depends. Regarding the age element, age *per se* does not necessarily aggravate the prognosis. Our interventions succeed as well in the infant as in the aged and we know now-a-days that prostatectomy can be successfully carried out in patients between 90 and 100 years of age. The gravity in fatal cases does not depend upon the number of years but upon the nature of the affection for which we operate, such as myxoma of the bladder or carcinoma of the kidney in the child, and the state of toxæmia in the infected, old-standing prostatic subject.

As is well known, general health plays a foremost part in the prognosis. A temperature is not a contra-indication, since it falls directly after the operation that gives issue to pus or relieves retention. One meets with patients with calculous bladders who have a temperature of 108° F. which falls to 98.4° F. directly after operation. On the other hand, any degree of cachexia, gradual weakening, loss of strength and especially previous profuse hæmorrhage are conditions that call for the closest attention. Existing diathesis such as diabetes, syphilis and albuminuria, though they do not constitute a

formal contra-indication, circumscribe the surgeon's liberty of action, obliging him to postpone an operation which is not altogether urgent and leading him to prescribe a preliminary course of treatment.

It is to be remembered that elements based on the local state of the urinary apparatus are objective signs which enable us to establish the prognosis. It is obvious that the excessive size of a renal or vesical tumour must aggravate the prognosis independently of the precise nature of the lesion just as the probable adhesions of a calculous infected kidney surrounded by perinephritis would lead us to apprehend a wound of the hilum or of the vena cava and, further, just as unduly resistant connections with neighbouring tissues would lead us to suspect diffuse prostatopelvic carcinoma comporting a grave prognosis and not merely benign glandular enlargement.

The integrity of the other organs plays an important part in fixing the prognosis in virtue of the principle that there exists a functional synergy of all the systems of the organism, that there is a close association between all of them, and that the imperfect function of any one organ may intervene to spoil the results of a correctly performed operation. It is because these principles have not been borne in mind that we sometimes witness operative disasters described as "surprises" or as complications, whereas they are the natural logical outcome. It follows that the surgeon ought to be physician enough to make sure by auscultation that the thoracic organs are intact; he ought more particularly to enquire into the digestive and hepatic functions where, in an infinitely complicated laboratory, waste products and toxins are elaborated as the result of intense functional activity. We must make sure that the myocardium will "hold good" so that only a big dose of toxins will weaken the strength of the contractions and that a displaced or dilated stomach is not going to interfere with proper alimentation and that the various glands of internal secretion have not curtailed their output.

In our opinion, the study of the prognosis in surgical affections of the urinary apparatus is the relationship existing between the clinical estimate of the degree of resistance of the subject and the importance of the traumatism or the causal gravity of the affection. It is obvious that these biological relationships are vastly more difficult to estimate than any arithmetical relationship.

Exhibition of Drugs, Vaccines, Sera, &c.
BURROUGHS WELLCOME & CO'S EXHIBIT
at the Meeting of the British Medical Association, London, 1919.

The keynote of Burroughs Wellcome & Co.'s display is "Replacement of Enemy Monopolies by All-British products." From the fact that nearly

twenty years ago Burroughs Wellcome & Co. were manufacturing Pilocarpine and its salts, and at a little later date Atropine, Eserine, Homatropine and their salts, it is obvious that this firm did not wait for the stimulus of hostilities to commence their attack on German monopoly, and their pre-war production of the Arylarsenate 'Soamin' made easier their notable achievement in the production of 'Kharsivan' and 'Neokharsivan' which replaced German Salvarsan and Neosalvarsan at so early a date after the outbreak of war as to mitigate in a large degree the inconvenience caused by the cessation of supplies of those products.

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A variety of Vaccines and Sera are exhibited—products of the Wellcome Physiological Research Laboratories—a noteworthy feature amongst them being "Influenza Vaccine" and "Influenza Vaccine Mixed." The former is indicated in cases where the presence of the Bacillus influenzae has been demonstrated, and for the mixed vaccine it is claimed that some immunity is developed against organisms producing pulmonary complications.

'Laxamel' is not a new product of the firm, but one that has increased in favour as a means of administering 'Paroleine' in other than its original form. In the guise of a palatable, jelly-like confection containing about 80 per cent. 'Paroleine', 'Laxamel' is readily taken by those who cannot tolerate the liquid.

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Messrs. Burroughs Wellcome & Co.'s exhibit is a demonstration that despite war-time restrictions on development they have succeeded in enhancing their reputation for originality, accuracy and reliability.



THE ANTISEPTIC.

Vol. XVI.]

JUNE 1919.

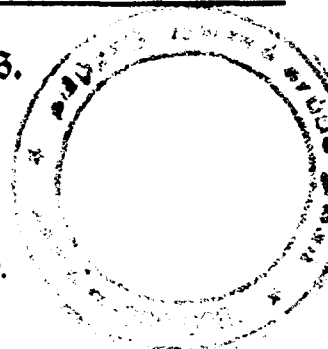
No. 6
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Original Articles.

* INFLUENZA.

BY

S. WYARD, M. D., M. R. C. P.



DEFINITION. At the present time no definition of this disease is possible since so little is known about its ætiology. Moreover, it is certain that hitherto the name has served as something of a rubbish heap to the physician much as neurasthenia has to the neurologist, and has been used to designate a medley of diseases separate and distinct from each other in their causation and symptoms, bearing no relation one to another in any respect and having only two things in common, viz:—fever and a nature of which we are altogether ignorant. In this way influenza includes conditions of all degrees of severity from a one-day fever with malaise up to an acute, almost fulminant disease characterised by inflammation of the respiratory apparatus and an intense toxæmia ending in death within 24 to 48 hours. All the evidence points towards its being due to an infection which is transmissible from person to person without the intermediation of outside agencies but the infecting virus is not well known and this has led to the confusion. A catarrhal inflammation of the respiratory tract may be produced by any of a number of different organisms and the manifestations of such catarrh are materially the same, whatever the organism responsible, so that all affections characterised by coryza and headache, pharyngitis, laryngitis, tracheitis, accompanied by cough and a muco-purulent expectoration—one of these alone or in combination with any of the others is commonly labelled as influenza. There can be no doubt that in consequence of this laxity in differentiation influenza is frequently diagnosed where it does not exist; indeed,

* Specially contributed to the *Antiseptic*.

except in times of pandemics and epidemics of the true disease the majority of cases ascribed to influenza are in reality some totally different condition. True influenzas, as a rule, a severe illness, though exactly as with small-pox, scarlatina, etc., its severity varies enormously and sporadic cases are undoubtedly less severe than those occurring at the height of an epidemic. It is, on the other hand, far more variable in its manifestations than the exanthemata and the clinical picture and morbid anatomy may show extreme differences in different outbreaks. This point is very well shown by the two epidemics which have just swept across Europe and it is upon these two pandemics that the following account is based. It is compiled from observations upon some 500 cases coming under the personal observation of the writer without any attempt at correlating the literature of the subject. In this limited field the disease may be defined as an acute infection by an unknown virus chiefly or entirely affecting the respiratory system and manifested by fever and malaise of variable duration and inflammation of the whole respiratory apparatus showing a peculiar liability to secondary streptococcal infection with the production of septic pneumonia.

II. **ETIOLOGY.** (a) *Age*.—Since all the cases observed by the writer were soldiers and therefore excluded children, adolescents and old people, it is impossible to form any correct estimate of the effect of this factor on the liability to the disease, but the impression left is that young adults suffer more frequently than elder men. This was the case in both pandemics.

(b) *Sex*. On this point no evidence is available.

(c) *Race*. Apparently all races are equally susceptible and none is immune.

(d) *Occupation* has little or no influence; those working in the open air are as readily attacked as those following sedentary and in-door callings.

(e) *Exposure and fatigue* do not appear of great importance—men leading comparatively comfortable and sheltered lives on the lines of communication fell as frequent victims as the men exposed to the hardships and labours of front line warfare. Climatic and atmospheric conditions too can probably be ruled out. In the first epidemic the weather was warm and dry; in the second warm and wet. Those inhabiting the colder and more rigorous regions of the north of England suffered neither more nor less than those in the milder and more sunny regions of the Mediterranean coast. Cold and wet are not direct causes but probably one who gets wet and subsequently cold becomes less resistant to all infections and thus more readily contracts influenza. Overcrowding also is a very efficient predisposing cause in that it increases the number of persons coming in contact with a given case and makes that contact closer. Previous disease of a different nature does not predispose to this affection—wounded men were

not more liable to it than those who had not been wounded nor did it frequently arise as a complication of a pre-existing illness. In short the whole etiology is in the access to the body of the specific virus from another person, the transfer being aided perhaps in a few cases by environment or other adventitious circumstances.

(f) *Bacteriology*. 1. The first organism implicated was a bacillus isolated by Pfeiffer in 1892 and round which much controversy has since raged. Some still maintain that it is the true virus, but the majority of workers are now of the contrary opinion and it may confidently be stated that the so-called B. influenza (Pfeiffer) is merely an associated organism which is not responsible for the disease. On the one hand the arguments in favour of the bacillus are:—

i. That it is found in some epidemics in almost all the cases and that were it properly looked for and cultured it would be found in more still.

ii. That injected intracerebrally into animals it produces pathogenic effects.

iii. That in some cases of influenza, both ante-mortem and post-mortem, it has been recovered from the blood stream.

iv. That in very severe cases it may be found also in the cerebro-spinal fluid, arthritic and pleural exudates, etc.

v. Agglutinins to the bacillus have been demonstrated in the blood serum of some patients suffering from influenza.

On the other hand it is argued that—

i. Many cases in all epidemics and all cases in some epidemics fail to yield the organism.

ii. It is found not uncommonly in cases definitely and certainly not influenzal in nature.

iii. It is not found in the sputum during the early stages but only after the appearance of a muco-purulent expectoration. The objection is made to this that in the former case the organism is restricted to the cells of the mucosa and is not liberated therefrom till later. This, however, is mere conjecture without any basis on facts.

iv. Intracerebral injection is no evidence since it can never reach the human body in that way and injected subcutaneously, intravenously or intraperitoneally into animals, it is absolutely non-pathogenic.

v. Its recovery from the blood stream, etc., is also no evidence of its causal relationship. Just as B. coli may become pathogenic to man in

some abdominal conditions so Pfeiffer's bacillus may do in some conditions of the respiratory tract, but in neither case is the organism the efficient cause.

The same thing applies to the presence of agglutinins in the blood stream—such bodies would equally be produced whether Pfeiffer were a secondary or the primary infection. Moreover agglutinins to Pfeiffer's bacillus in this way have been found only by some workers and others have completely failed ever to find it while those who have found it have done so only in some cases and not in others. Nor have the cases presenting the phenomenon differed in any way clinically from those that do not, thus uncomplicated cases, cases with broncho-pneumonia and convalescents will each and all sometimes give positive results, sometimes negative. The dilution too in which agglutination is effected is low and as far as the writer can learn has not been found higher than 1 in 25 to 1 in 50. In the case of *B. typhosus* the titre may rise as high as 1 in 5,000 or even more; the meningococcus may be agglutinated at 1 in 200 to 1 in 400; *B. dysenteriae* (Flexner) is often agglutinated by normal serum at 1 in 125 so that the *B. influenzae* does not agglutinate at as high a figure as the lowest of the demonstrated specific reactions and lower also than some other organisms are agglutinated by normal serums. Further the fallacy mentioned in the next paragraph may have some bearing on this question. Thus it remains to be proved that the organism agglutinated is in reality the *B. influenzae*; that the agglutination is a specific response to an active infection and not merely a group phenomenon similar to the agglutination of Flexner by normal serum; and finally that this infection is the cause of every case of influenza and not merely a secondary implantation upon some cases of that disease.

vi. It is more than possible that many of the organisms recovered from influenzal cases and called *B. influenzae* are not in reality that organism but Coliform or other Gram negative bacilli which are very frequently present in influenzal sputa.

Thus the balance of evidence is against Pfeiffer's bacillus being the cause of influenza.

2. Gram positive diplococci have been isolated and some attempts at identification have been made. No satisfactory results, however, have been obtained and there is nothing to show that they are in any way responsible for the disease. Indeed it seems more than probable that they are merely pneumococci modified morphologically by the medium on which they are grown.

3. Nicholls has demonstrated a filter passing virus in the sputum which is pathogenic to monkeys. This is the most promising observation

hitherto made and may eventually solve the problem. Much, however, yet remains to be done in defining it more precisely.

4. *Streptococci* may be recovered from the throat and sputum of all cases of influenza, from all cases of broncho-pneumonia following that disease, often from the blood stream in life and in the majority of cases from the heart blood after death. It is, however, fairly certain that these organisms are not the cause of the disease which predisposes to infection with them but they are the cause of nearly all the complications and a great number if not all of the deaths. They are of various species and vary enormously morphologically. From the present series of cases streptococci have been isolated from 31 out of 33 sputa, cultures of which have been made. No attempt was made to differentiate the various species which were evidently very numerous. At first the cultures were made on blood agar and it was found that some of the streptococci were hæmolytic. No record was kept of the exact number of these, but the impression left is that they predominated. They were not, however, by any means all of this type. Attempts were made to determine the production in the blood of broncho-pneumonics of agglutinins to their organisms. Five strains were employed but it was found impossible to prepare an emulsion that did not spontaneously sediment. Agglutinins have nevertheless been discovered by some observers. This experiment failing, the complement fixation test was applied but again failure resulted for all the strains of cocci were strongly anticomplementary in themselves. The matter is still under investigation. At the present time all that can be said is that Pfeiffer and streptococci of various species may either or both be the cause of complication in influenza but neither has been proved the cause of the disease itself. How they gain access to the body is not known. That they are transferred from patient to patient in the same way as the primary infection is extremely unlikely. Patients occupying beds on either side of a streptococcal pneumonia are not more likely to fall victims to a streptococcal infection than any other patients. The probability is that those streptococci normally inhabiting the throat of the human individual either take on an increased virulence in symbiosis with the virus of influenza or that the latter virus so lowers the resistance of the body that streptococci normally innocuous become pathogenic or both influences may be effective simultaneously.

5. *Spirochaetes*. Some sputa especially those of the earlier epidemic, literally swarmed with spirochaetes so that smear preparations resembled those typical of Vincent's angina except that fusiform bacilli were in every case absent. This excessive number of spirochaetes suggested the possibility of their being the cause of the disease. Further investigation, however, soon removed such an idea. Spirochaetes were as frequently present and in as great numbers in sputa from cases other than influenza, e. g., phthisis, etc.

What limits the progress of the disease is unknown. Individual immunity can play little or no part in doing so for it seems certain that no immunity is acquired to the disease (*vide supra*).

IV. MORBID ANATOMY. In the present series no case died without pulmonary involvement and the morbid anatomy of the disease practically limits itself to the lung changes. What, if any, alterations occur in the various organs in those patients who suffer from uncomplicated influenza it is impossible to say as they never come to post mortem examination.

The affection of the respiratory tract is below the larynx; this and the upper air passages are always normal. The trachea and bronchi are always somewhat inflamed being found red and injected when opened. Rarely empty, they are as a rule filled with a liquid exudate which may be viscous and tenacious like whipped egg, white stained, not streaked, with blood of a slightly brownish red colour or a thick similarly stained dirty green muco-pus. This liquid wells up out of the bronchi when the trachea is opened.

The pleurae show no degree of inflammation in every case. It varies from the merest roughening and dulling of the membrane to a thick, sticky plastic, yellow, lymphoid exudate and so to suppuration and the formation of an empyema. In the plastic type the two layers of the pleura may stick together and these adhesions subsequently become organised into fibrous bands. The several lobes on either side are generally adherent to each other. Once a blood-stained pleural effusion was found out of one pint. In the majority of cases numerous hæmorrhages are present beneath the visceral pleura. They vary in size from that of a pin's head to the area of a threepenny piece.

The condition of the lungs varies very greatly. In two cases no consolidation was discovered but the bronchioles throughout were filled and occluded by thick muco-pus: a purulent bronchiolitis. On section the organ presented the usual serated and spongy appearance but everywhere were scattered yellow points of pus where it welled up out of the cut ends of all branches of the bronchial tree.

The next stage is that of broncho-pneumonia. The lungs are heavy and feel nodular on palpation. They crepitate on pressure and on section. The cut surface is congested and shows scattered granular patches of consolidation. These patches may be small and discrete, larger and confluent in some parts, forming large masses of consolidation or involve a whole lobe or a whole lung. Consolidation is, however, never absolute and even in the most extensive cases some air can be expressed from the pulmonary tissue. Such a lung is on section fairly uniformly granular in appearance, either dark red or greyish in colour, and very friable. The whole organ is

large and very heavy. The cut surface is sometimes dry and sometimes drips blood or a blood-stained œdema fluid. The upper lobes are in the main more often and more extensively affected than the lower, while, not uncommonly, the œdema is extraordinarily limited in its distribution; the upper lobe is completely water-logged and an enormous amount of fluid can be expressed while the lower lobe of the same lung is dry and on pressure only a little blood exudes from the cut vessels. Very often small hæmorrhages can be seen scattered throughout the consolidated mass.

In the first epidemic the condition was never as acute nor as a rule as extensive as above and œdema did not accompany the broncho-pneumonia nor were pulmonary hæmorrhages seen. The distribution of the solid areas was also different in that the lower lobes were generally involved to a greater extent than the upper and the parts further from the root of the lung more than the centre. In the later epidemic consolidation practically always commenced about the root and sometimes the whole centre of the organ was solid while a superficial zone of serated and porous lung tissue remained around it.

In the cases occurring during October and later suppuration not infrequently supervened upon consolidation and on section the lungs presented numerous scattered yellow points of pus bearing no relation to the bronchi and bronchioles, while once several such abscesses were found confluent with the formation of an abscess cavity about the size of a walnut across which ran bands of fibrous tissue and blood vessels.

These cases also showed in some instances a condition absolutely peculiar to this epidemic, *viz.*, an acute congestion and œdema of the lungs. The organ was large and heavy and on section dark red without the granular appearance of consolidation. The cut surface dripped fluid and on slight pressure an enormous quantity of blood-stained fluid was expressed while the lung became and remained much smaller. The tissue was not friable as with broncho-pneumonia. Moreover, the distribution was almost never universal, only some of the lobes being affected while some of the others showed not a sign of the condition and frequently it was an upper lobe that was œdematous the lower being comparatively dry. With this no evidence was present of any marked degree of heart-failure or circulatory stagnation so that the œdema would appear to be entirely an expression of the toxæmia. The cases were always the most acute of the series.

Microscopically the broncho-pneumonic cases showed the usual changes typical of that condition—a patchy consolidation due to a fibrino-cellular exudate into the alveoli. The content of any particular alveolus may vary within very wide limits; some showed fibrin alone without any cells, some a few polymorphonuclear leucocytes, some were closely packed with

these. In most cases a greater or less number of erythrocytes were also present. At the same time there was generally some proliferation of the alveolar endothelium with desquamation, the cells being larger than normal and the nuclei showing signs of recent or approaching division. Frequently the capillaries were dilated and distended with blood; sometimes this was the outstanding feature of the section, but at others they were normal in size. Where suppuration had ensued minute abscesses were seen filled with pus in which the alveolar walls were destroyed and surrounded by a zone of hyperæmia. The bronchioles were often filled with pus or cells entangled in a network of fibrin. Small hæmorrhages were common, rarely or never interstitial but always into the alveoli a group of which would be seen filled with blood. These had often the appearance of infarcts except that there was no necrosis of the normal lung tissue within the area.

When the case was one of acute œdema the picture was quite different though here again similar hæmorrhages were frequent and the majority of the alveoli were filled with exudate. Cells, however, were few in number, merely a few desquamated endothelial cells with some sparse leucocytes. For the most part the exudate consisted of a fibrinous network or an albuminous fluid which when stained gave a smooth uniform area. Apart from the hæmorrhages blood cells were commonly mixed with the œdema fluid and the capillaries much engorged with blood. Though the œdema was generally intra-alveolar and did not involve the lung tissue itself in one or two cases the opposite prevailed and the œdema was almost entirely interstitial, the alveoli being empty.

In some instances both these conditions existed side by side—œdema and broncho-pneumonia being mixed together in a single patch or the former forming a zone around the latter.

The mediastinal glands are always enlarged and hyperplastic and congested with blood.

In only one case was the pericardium abnormal and that contained about 6 ozs. of clear fluid. A plastic inflammation or pyopericardium was never found. The heart rarely showed any dilatation though the muscle was often soft and flabby. Occasionally the right ventricle was very slightly dilated. The endocardium was in every case normal and no valvular lesion was ever discovered. No changes were observed in the blood vessels and those in the blood—as regards the cellular elements—are dealt with in a subsequent paragraph. It is certain, however, that some other changes in one or both of these structures must be produced to account for the numerous hæmorrhages found. No local effect upon the pulmonary capillaries is sufficient to explain all the facts for although pulmonary hæmorrhages are the most common yet they are not the only ones to occur.

In addition to other visceral hæmorrhages (*vide infra*) epistaxis not infrequently accompanies the onset of broncho-pneumonia and may be very severe.

The liver and kidneys showed cloudy swelling only. No other changes occurred.

The spleen varied enormously in size from a couple of ounces up to 10 or 12 and on section might be soft and pulpy, of a pinkish colour, or dark and firm with the Malpighian corpuscles standing out well.

The adrenals were as a rule unchanged but sometimes presented a swollen appearance with loss of differentiation between the various strata or minute hæmorrhages, or even a large extravasation of blood increasing the organ to several times its normal size.

The alimentary tract was in every case normal.

A peculiar lesion was observed three times in the later epidemic, viz:—rupture of the rectus abdominis muscle, about midway between the umbilicus and pubis: twice the right rectus and once both right and left. Hæmorrhage had taken place into the gap but no discolouration had reached the skin surface. The posterior aspect of the abdominal wall was, however, discoloured over a large area about the tear. No symptoms were presented during life and the condition was only discovered post mortem.

The skull was opened once only and then the meninges were found to have a frosted appearance, the basal lymph spaces were distended with fluid and the choroid plexuses œdematous. The brain substance was normal: there were no hæmorrhages nor signs of inflammation.

V. SYMPTOMATOLOGY. *Incubation period.* The writer has been unable to make any observations that throw light upon this question and finds it impossible to make any definite statement. It is probably, however, very short and symptoms appear within 12 to 24 hours of infection. Whether this is always so or whether the incubation period may be drawn out to a longer time—a length of days—must be left for determination to others who have had more opportunity of investigating the matter. Two cases came under the writer's care until the lapse of three to five days after the onset and in no case was it possible to determine the exact source of infection.

It is difficult to give any concise and general description of the clinical picture presented by influenza since it is so protean in its manifestations and presents no typical appearance. In the mildest cases there is nothing more than slight fever with malaise and perhaps headache and pain in the back and limbs or all these together. The temperature rises to 100° F. or 101° F. and falls to normal again in 24 hours to 3 days. There are no physical signs, the patient is rapidly convalescent and there are no after effects. In

rather more severe cases the pyrexia persists for a longer period, a week or more; there may be coryza and pharyngitis, often. But again the temperature is never very high and the patient is not so ill as to cause any anxiety. A considerable or marked degree of debility may, however, persist for some time after convalescence is established, evidenced by an irritable heart, a feeling of lassitude and not infrequently mental depression. In the severest cases there is extreme prostration, great pain in the back and limbs, headache, high fever and marked pharyngeal and tracheal catarrh. The temperature rises to 102° F. to 104° F., the pulse is frequent and feeble with a low pulse pressure, the systolic pressure being normal or slightly below it.

The onset is always sudden and the height of the disease both subjectively and objectively is quickly reached. In a very short time the patient is feeling as ill as he ever was during the attack and what few physical signs are going to appear will do so at the same time. He is dull and drowsy with a congested face and lies curled up on one side in bed. The temperature rises rapidly, within a few hours, to its fastigium. Here it remains fairly steady, slightly lower in the morning, until it finally falls, generally almost as rapidly as it rose, reaching normal in 12 to 24 hours. It is neither remittent nor intermittent. Rigors do not occur. The colour remains good though the face is flushed. The facies and skin surface present nothing characteristic. No rash appeared in any case of this series. The mouth is dry and the tongue furred, often thickly. There are as a rule no physical signs but occasionally there may be some diffuse wheezing throughout both lungs and if the case be severe careful percussion may reveal a slight cardiac dilatation as in all fevers. Apart from this the heart never presents any abnormality. No evidence has ever been found of endocarditis or myocarditis. The respiration rate is not increased, there is no dyspnoea. The sputum is scanty, viscous and tenacious at first, later it may become looser and mucopurulent in character or consist of pellets of thick, greenish pus. The blood presents no changes; both red and white cells remain normal in their characters and numbers, though in a few cases leucopenia—3,000 to 3,500 per c. mm.—is found. The urine remains normal in most cases but sometimes a slight albuminuria occurs and rarely hæmaturia which may be extreme. Casts are, however, absent in both cases which are due to an alteration in the permeability of the renal tubules brought about by the toxæmia and not to a true nephritis. In neither case is the condition of long duration. Delirium rarely if ever supervenes and the mind preserves its faculties but, as already stated, depression, at times acute, is sometimes observed.

Relapses are not of common occurrence though seen in a few cases. When one does ensue it is generally less severe than the first illness but not always so. In one case a moderate attack of uncomplicated influenza was followed

by a relapse in which a fairly severe broncho-pneumonia developed. There is in this case the possibility of reinfection since the patient was in a ward with many other cases of influenza some of whom had broncho-pneumonia as well.

Such is a sketch of influenza uncomplicated, presenting very little that is tangible and nothing that will distinguish it with certainty from many other conditions. As is already obvious the majority of the cases are mild and of little importance except in so far as they may spread a more virulent infection to their neighbours. Exactly how far it may be looked upon as a fatal disease, will be further considered in a later paragraph.

The two 1918 epidemics were similar in their general characteristics but one difference existed, in that during the second, coryza was conspicuous by its absence. It appears probable also that tracheitis and bronchitis were equally far less frequent apart from broncho-pneumonia than in the former or in other words catarrh of the respiratory passages was an integral part of the first epidemic, a complication due to a secondary infection by the streptococcus in the second. To dogmatise on this point is, however, impossible since in the majority of the October-December cases broncho-pneumonia commenced centrally and the patient was obviously suffering from it for some time before any physical signs of consolidation could be discovered while in the June-July series such was not the case, at any rate to any considerable extent. Hence in the latter it was possible to decide with a fair degree of accuracy whether or not broncho-pneumonia existed, in the former impossible, and it is probable that where bronchitis was present there also more or less consolidation had taken place.

Broncho-pneumonia was responsible for practically all the deaths from both epidemics but in the later a few were due to acute congestion and œdema of the lungs. These cases occurred at the height of the epidemic and the fatal issue ensued within a short time of the onset—5 or 6 days—and within 24 to 48 hours of the onset of the œdema.

No alimentary lesion has occurred but vomiting is not infrequent at the onset of pneumonia and in the later stages incontinence may be present.

The delirium, as already mentioned, is asthenic and the patient can be roused out of it. Never is it maniacal, homicidal or suicidal. The patient is continually muttering incoherent and incoherent sentences and if he gets out of bed is dazed and stupid, wandering aimlessly about until put back again.

Convalescence is slow and protracted and the patient remains long debilitated and weak. The chest slowly clears, the expectoration diminishes and

the cough becomes less frequent. On the other hand the signs of approaching death appear suddenly and rarely does the patient slowly sink. Without anything to warn the physician the pulse suddenly goes, the cyanosis becomes lividity and death takes place in an hour or two.

The physical signs are identical with those above when any are present. But whereas in the earlier cases the broncho-pneumonia affected the whole mass of the organ indiscriminately, in the later it was far more commonly central in position and probably every case first started there. Consequently physical signs by no means kept pace with the progress of the disease and a patient was often seen to be suffering from extensive pneumonia while absolutely no sign was discoverable to reveal the consolidation. Influenza alone produced no signs in the chest as a rule. Sometimes, however, bronchitis occurred but the appearance of crepitations and rales was generally the first sign of a developing broncho-pneumonia and was always to be looked upon as of serious import. Often these were the only abnormality to be heard and no abnormality was revealed by the other methods of examination. It was only after the disease was comparatively long established and of wide extent that impairment of the percussion note and bronchial breathing made their appearance.

VI. COMPLICATIONS AND SEQUELAE. 1. Of all the complications broncho-pneumonia was by far the commonest and was responsible for most of the deaths in the first series of cases. Here the onset was from the 5th to the 9th day, most commonly the 8th. It was fairly sudden. The patient, who appeared to be following a normal course, became suddenly worse, cyanotic, with frequent pulse, rapid respiration and a frequent but inefficient cough, death supervening in 2 to 3 days. With the appearance of these symptoms the temperature rises still higher, to 102°F. to 104°F. and is somewhat intermittent though very irregularly so, in type the variation being 1 to 3 degrees. Occasionally it is irregularly remittent. Sometimes it will fall to normal and 24 to 48 hours of apyrexia ensue followed by another rise and an exacerbation of the symptoms. Cyanosis was common, the face being congested and purple, but some cases never presented this symptom. In one case it only occurred at times, the colour being normal in the intervals. It is due to deficient oxygenation of the blood brought about in a few cases by the diminution in the mass of functioning lung tissue, but as a rule is due to failure of the circulation, the heart being more or less dilated and the muscle flabby and soft. The pulse is at first frequent and full but soft; later it becomes weak and small. The respiration is rapid and shallow with the *alæ nasi* working and there is generally orthopnoea. At first expectoration was scanty and mucoid in character; it became copious and muco-purulent or purulent, thick and greenish in colour, often tinged or streaked with bright blood. Occasionally the cough never loosened and only a very little sputum

was brought up throughout the course of the disease. Delirium was uncommon but occasionally developed towards the end and the patient became incontinent. The urine may contain albumen (*vide infra*).

On examination of the chest the usual physical signs are discovered. *Inspection.* The movement of the chest wall is frequently limited owing to the presence of pleurisy but is not full as with lobar pneumonia. *Palpation.* Sometimes friction can be felt but not commonly. Vocal Fremitus may be increased or normal but if there be much pleurisy or any effusion it may be diminished.

PERCUSSION. Some dulness is generally found. It is rarely complete or absolute unless there be at the same time an effusion into the pleura. Often it is patchy in distribution. As the consolidation progresses the area of impairment increases. A marked degree of broncho-pneumonia may exist without any alteration in the percussion note.

AUSCULTATION. Rhonci were present in every case but were at first limited to the larger tubes. Thence they gradually spread downwards and crepitations appeared at the bases while expiration became harsh and prolonged. At this stage consolidation is probably commencing. When established the breath sounds are bronchial in character and accompanied by fine moist sounds. Vocal resonance is increased and there may be whispering pectoriloquy. The signs vary enormously from place to place.

In the second epidemic the broncho-pneumonia was more severe in character and the clinical picture a little different. Here again, however, the onset was sudden and evidenced by collapse and rapid increase in the gravity of the illness in a patient apparently going on well. Cyanosis rapidly supervened, the face and mucous membranes and extremities becoming purple and congested. Vomiting not infrequently ushered in the condition and less frequently but not uncommonly epistaxis. As a rule the amount of blood lost was not great but occasionally the bleeding was severe. The onset of the complication was earlier than above, viz.:—the 2nd to the 8th day of the disease, generally the 5th. At first rapidly and frequently fatal as time went on, death occurred only after a longer interval and in fewer cases. The first 12 deaths occurred from the 2nd (5 cases) to the 5th (3 cases) day—average 3 days after the onset of the pneumonia; the last 8 from the 5th to the 9th day, average 7 days. The patient was obviously extremely ill lying on his back with his shoulders propped up; the breathing was very rapid and laboured and there was a low muttering delirium from which he could be roused at times to answer questions and he was constantly getting or trying to get out of bed. The hands were tremulous and picking at the clothes. Often the knees were drawn up and altogether he presented a most typical typhoid state.

The temperature varies very much with different individuals. In a few cases that also resembled that of typhoid with its three weeks' duration, consisting of one week of steady rise, one of fairly uniform high temperature and one of steady fall. In others the rise was rapid to 103° F. to 104° F. where it stayed for anything up to 7 to 10 days, then fell as rapidly. Some presented an intermittent temperature, a few irregularly remittent. Not uncommonly the temperature fell to, and remained normal for a few days only to rise again. A rigor was extremely rare.

The pulse was small and relatively slow. No irregularity was noted. As the end approached it became weaker until it was impalpable shortly before death. The heart rarely showed signs of failure and was normal in size and shape in the majority of cases but in one or two instances the right side was a little dilated. Pericarditis and endocarditis were never observed but one case had a considerable excess (6 ozs.) of clear fluid in the pericardial sac after death.

Respiration was rapid, shallow and laboured. It rose often to 50 or 60 per minute. The mouth was kept open and the *alae nasi* were working. It was easiest in the sitting posture and most of the patients were unable to lie down. The pulse respiration ratio was pretty constantly 2:1.

Cyanosis was marked in all cases but varied in depth with the severity of the illness and the extent of the pulmonary consolidation. The colour was purple and due to diminution in the amount of functioning lung tissue and not to cardiac failure.

Blood. In uncomplicated influenza the blood undergoes no demonstrable change. There is no anaemia nor any leucocytosis. With the onset of broncho-pneumonia, however, the leucocytes at once increase in number and this may occasionally give the first warning of such an event. Usually the leucocytosis is moderate in degree—15,000 to 20,000—but a count of over 70,000 was once made. The higher the count and the longer the time it persists the graver the outlook: a fall is of good omen. The increase is entirely due to the polymorphonuclear cells which form anything from 85% to 95% of the total white cells. Septicæmia is a terminal event in most cases though it does not manifest itself clinically. Streptococci can constantly be recovered from the heart blood post mortem and frequently from the circulation ante mortem. In one case there was a septic clot commencing to suppurate in the cavities of the heart. Metastatic abscesses, however, have never been seen and it is probable that the blood infection is rarely if ever massive.

The sputum presented the same characters generally as in the former epidemic but was more frequently scanty in the latter. Many cases lost more or less completely their cough reflexes with the result that expectoration was very slight. These were the worst cases met with. Often as before the sputum was blood stained.

The urine may contain albumen and sometimes blood which may be in great quantity but casts are absent. Nor has evidence of nephritis persisted in any case after convalescence has become established. The albuminuria and hæmaturia are apparently due to the toxæmia and not to a true nephritis.

As with influenza itself relapses are not common but do occur. The temperature after falling to and remaining normal for some days rises again and fresh signs in the lungs make their appearance. They are rarely if ever as extensive as in the first attack.

2. Lobar pneumonia is a very rare complication of influenza but is not unknown and presents the same features as if it were the primary disease and not a complication of another. From broncho-pneumonia of moderate or slight extent it is easily distinguished by the patchiness of the signs in the latter case but from a massive and confluent broncho-pneumonia it is indistinguishable by signs. The course taken by it alone offers some indication—the steadier temperature during the *fastigium* and the fall by crisis with immediate improvement in the patient's general condition. Only two cases occurred in the present series—one fatal.

3. Acute pulmonary oedema. Like the above this condition may appear with extraordinary suddenness and prove rapidly fatal—more rapidly even than broncho-pneumonia does. The patient becomes suddenly extremely ill; the cyanosis is intense, breathing rapid and laboured, the cough is frequent and large quantities of frothy, viscous sputum, very like whipped egg-white, and stained with blood is brought up; the pulse becomes small and weaker. The onset is between the 2nd and 5th days of the disease, average 4th, and death ensues within 24 hours to 4 days, average 2 days.

The outstanding feature of this condition is the cyanosis which is extreme and peculiar. It is quite different from the purple and congested colour of a failing heart but is a slate blue, livid colour like that produced by no other disease. This type of cyanosis though commonest with oedema of the lungs is not restricted absolutely to that condition but is occasionally seen in cases with broncho-pneumonia. Nor is it always seen with oedema which may sometimes be accompanied by the usual purple cyanosis.

There is no characteristic temperature chart. The pyrexia may increase with the onset of oedema or remain unchanged; it may fall terminally or remain at the same level. An agonal hyperpyrexia was never seen.

The pulse is small and weak, slow in comparison with the temperature about 80 to 90 per min; occasionally, absolutely slow—50 to 60 per min. No abnormality was discovered in the heart: no alteration in the sounds, no increase in the area of cardiac dullness; sometimes the heart is irregular but this is not a marked feature nor commonly seen.

The sputum is not that of pulmonary œdema due to other sources; it is not a copious watery fluid but viscous and tenacious and always with a dull red tinge due to blood. Large quantities—2 to 4 pints in 24 hours—may be expectorated but in the severest cases the cough reflex is diminished or lost and little is brought up.

Delirium presenting the same characters as that in broncho-pneumonic cases is an almost invariable concomitant of this condition.

Few physical signs make their appearance. The movements, size and shape of the thorax are unaltered. There is no dulness on percussion though the percussion note may be more or less impaired. The breath sounds are vesicular in character but accompanied by rales and crepitations. There are none of the signs of consolidation.

In the majority of cases the patient becomes steadily worse, the heart grows steadily weaker and finally death ensues. A severe case rarely if ever recovers but it is probable that some of the less severe eventually pull through. In these latter, however, the diagnosis is always to some extent doubtful since it is impossible to distinguish between a mild central broncho-pneumonia and a slight degree of œdema which, moreover, may produce no distinctive signs from which its presence can with certainty be deducted.

Broncho-pneumonia and pulmonary œdema have been described as complications of influenza but such a view is quite open to the criticism that they form in reality an integral part of the disease. No one can at present be dogmatic on the point which turns upon what proves to be the cause of the conditions. In all cases where these complications (as they are considered in this paper) exist the sputum swarms with streptococci which are also found in the lungs and alveolar exudate post mortem. The same is true of the B. influenza (Pfeiffer). Which of these causes the pneumonia or œdema? If the streptococci, then the conditions are complications, for influenza is certainly not due to the streptococcus. If to Pfeiffer, there is still doubt for it may be that this virus is responsible for all the changes or that the primary disease is due to some other organism while Pfeiffer gives rise to the complications. Until the ætiology is finally settled the position of these complications in the clinical picture cannot be definitely determined; hence as they make their appearance in the minority of cases and for the sake of clearness of description it was decided to deal with them here in the above fashion and not as part of the disease proper. Further that the streptococcus is actually the cause of the complications is pointed to by the fact that influenza *Per se* causes no leucocytosis, often a leucopenia, whereas the onset of broncho-pneumonia or pulmonary œdema is followed at once by a rise in the leucocyte count.

4. PLEURISY. This is a concomitant of practically every case of broncho-pneumonia and most cases of œdema of the lung and produces the

characteristic signs by which it can be discovered. Friction is rarely felt nor the rub heard. As a rule it is of little immediate import. The exudate is a plastic lymph without free fluid and as the lung condition clears so does the pleural. In some cases adhesions will persist but do not betray themselves by any signs. Pleural effusions do occur but in no case seen by the writer did the fluid reach a great quantity nor require evacuation. Occasionally pleurisy is not coincident with broncho-pneumonia or other complication. Thus, for instance, one case who developed broncho-pneumonia made a good recovery from it, the temperature falling on the 8th day of illness and convalescence was apparently established when on the 16th day from the onset of the primary disease the temperature rose, he got pain in the left side of the chest, worse on deep inspiration and orthopnoea. Examination revealed some impairment of the percussion note over the left base and a friction rub. Nothing abnormal was discoverable in the lung itself. The inflammation gradually cleared up and he made a complete recovery.

(To be continued)

OUR CONTEMPORARIES.

MEDICINE.

Minor Thyroid Insufficiency.

A Condition Met With Daily.

From amongst the less well-favoured of our fellow travellers in the streets and trains, many can be selected who, although themselves unconscious of any departure from the normal, have suffered some common type of misfortune. One such class is that which shows the effects of inadequate secretion of the thyroid gland: Its numerous members are known by the premature greyness and scantiness of their hair, which recedes both from the occiput and forehead, by the thinness of the outer half of each eyebrow, by a certain coarseness of feature and a tendency to puffiness under the eye, by the harshness of their skin and the brittleness of their nails, by their obvious chilliness in winter, by the blueness of their hands and ears, and an unnatural flush over their malar bones. The grosser forms of this disorder are easy to detect, but for the diagnosis of the mild degrees practice is required, and an aptitude to see our fellow creatures as they ought to be rather than as they are.

The thyroid regulates growth, and various degrees of dwarfism follow upon its defective action in early life. The minor failures of development alone concern us here. They may be of a cretinoid type, with definite stigmata or of the Lorain type, in which the evolution of the various parts is

proportionate, but the whole somewhat diminutive. The epiphyses are late in uniting, and, until their union with the bony shafts is complete, increase in stature is possible under appropriate treatment. A series of radiograms should always be examined before a prognosis is made regarding the possibility of growth.

Thyroid secretion also regulates katabolism, and when insufficient the tissues become clogged with a mucin-like substance which is probably an intermediate product of katabolism.

These two factors—namely, diminished rate of combustion and myxoedematous infiltration—account for many of the signs and symptoms of the disease. Internal temperature is subnormal; there is a subjective sensation of cold, particularly in the hands and feet and a tendency to shiver even when heavily clothed. Winter is a time of great discomfort, and unless there is coincident visceroptosis a decided preference is evinced for hot weather.

Infiltration of the subcutaneous tissues is not pronounced in the mild varieties under discussion, and gives rise merely to a thickening of the features and a full habit of body, the latter by no means always conspicuous. Infiltration of the muscles and of the tissues around the joints often causes pain and stiffness of movement, producing a condition which is frequently mistaken for muscular rheumatism or even rheumatoid arthritis. The pains, which are usually worse at night, affect all parts. Most frequently, however, they are felt in the dorsal musculature, where they constitute an intractable backache.

In the digestive system peristalsis becomes sluggish, and the abdominal musculature so weakened that constipation and develop visceroptosis. Appetite fails and is often replaced by distaste for food, especially for meat. Secondary changes affect all parts of the alimentary tract, and manifest themselves as oral sepsis, various forms of indigestion, and of abdominal pain, the prominence of which symptoms may so compel the attention that the underlying subthyroidism is overlooked.

In certain cases the sensitiveness of the bladder increases, possibly because of a myxoedematous infiltration of the trigone, and a constant desire to micturate is experienced. Nocturnal enuresis is also common, and the possibility of subthyroidism should always be borne in mind when one is confronted with this disorder.

The thyroid gland has a profound influence over the organs of sex, not only regulating their development, but also assisting in the maintenance of their functional activity. In the subthyroidic the uterus, ovaries, and testicles develop late, and the suprapubic hair is scanty. Menstruation is delayed in its onset and abnormal in character, an excessive amount of blood usually being lost. Fertilisation of the ovum is just as likely to occur in a subthyroidic woman as in a normal one, but the embryo is often carried away by a

profuse flow at a later menstrual epoch. During pregnancy the activity of the thyroid gland increases, and subthyroidic women often feel fitter during this period, although their symptoms begin to return after the puerperium. Usually lactation is imperfect, and menstruation recommences quickly.

Nerve and mental symptoms are numerous and of very great importance. Sensations of tingling and of "pins and needles" are commonly experienced in the limbs. Headache on waking is very characteristic and may resemble that of frontal sinus catarrh or radiate upwards from the occiput after the fashion of neuralgia. Like so many of the symptoms of benign subthyroidism, these headaches improve towards evening, especially after a good dinner with wine. Noises in the ears and vertigo are also common. The latter may occasion a fall, although in its slighter forms it merely gives rise to a sense of insecurity. General mental torpidity, impairment of memory, defective powers of association, and a difficulty in verbal expression are extremely common. Somnolence and heaviness of sleep are almost invariably present. The outlook on life is usually one of depression and melancholy.

The disease attains a maximum incidence amongst the middle-aged women of the so-called working classes, and is the cause of much misery in the homes of the poor. The afflicted one can only discharge her responsibilities imperfectly and is unable to maintain the efficiency of her household. Ill-planned expenditure and effort, dirtiness and disorder, combined with the patient's own physical sufferings and the psychic atmosphere of irritable, suspicious pessimism which emanates from her, produce a condition of distress only rivalled by that of homes which are under the ban of drunkenness.

Diagnosis, therefore, becomes a social obligation and treatment quickly brings its recompense. The subthyroidic do not tolerate thyroid extract so readily as do the healthy, so that the initial dose should be small and systematic increases made at short intervals. The tachycardia and palpitation which often follow act as warnings that the dose must only be increased with caution, but are not signs of hyperthyroidism. The heart muscle is impaired in vitality and shares the general myxoedematous infiltration. Its mechanical efficiency temporarily is lessened by the removal of the myxoedematous padding at a time when a general rise in metabolic activity is calling for a vigorous cardiac response. Consequently symptoms of cardiovascular distress are experienced. In severe cases the patient should be kept in bed for a short period when treatment is first started so that much of the strain being removed the dose can be increased more quickly.

Too rapid depletion may produce untoward effects in other parts. Undue laxity of ligaments is sometimes induced with resultant instability and deformities, one of the commonest of which is knock-knee. Any pre-existing tendency to visceroptosis is aggravated. The loss of hair which

frequently occurs at first is merely a loss of an imperfect growth. Reassurance can be given with confidence that a more luxuriant crop of more lustrous hair will soon replace the old.

The effects of correct dosage are prompt and dramatic. The rate of metabolism increases and the patient's weight falls steadily. The output of carbon-dioxide from the lungs and of urea from the kidneys rise to a much higher level than that of health. This phase, however, ends when the combustion of the myxoedematous store is complete. Metabolism then returns to a normal rate and weight remains constant. After a varying interval the weight often rises again even in adults. This secondary gain is due to the development of healthy tissues and to a general improvement in nutrition. It must not be confused with the relapse which ensues if the patient becomes careless and omits to take thyroid extract. When this stage has been reached the most conspicuous part of the treatment has been accomplished, but much still remains to be done. Many cases of subthyroidism are due to antenatal toxæmias, such as those of tuberculous and syphilitic infection in the parents: The gland having been damaged before birth is beyond all therapeutic aid although its lesion is non-progressive. Many glands, however, are injured after birth, sometimes by acute and transient causes such as the exanthemata, but very frequently by chronic and persistent causes which produce slowly increasing lesions. Such harmful agents are chronic alcoholism, chronic lead-poisoning, the chronic bacteraemias and toxæmias which arise from oral sepsis, chronic throat infections and disorders of the lower parts of the digestive tract, chronic exhaustion from overwork, excessive child-bearing and incessant worry. The detection and eradication of these deleterious factors call for a careful clinical and sociological survey. Their control prevents further destruction of the thyroid gland and may even permit of its partial regeneration.

A general plan of treatment is to give half a grain of standardised thyroid extract nightly for about two weeks, and then give a second daily dose in the mornings. A little later the extract may be given three times a day, and in the class of benign myxoedema under discussion it is rarely necessary to increase the dose beyond this point. As a rule better results are attained by supplementing the thyroid extract with an adjuvant drug such as grey powder and soda, or arsenic iodide of calcium iodide, but these drugs should never be given for long periods at a time.

All ætiological factors capable of increasing the defect in the gland should then, as far as possible, be controlled, remembering that amongst these are included not only the original causes, but also chronic infections which have arisen in consequence of the subthyroidic state.

Finally, the minimum dose of thyroid extract necessary to maintain the efficiency which has been established should be ascertained by careful trial and this dose prescribed for life-long usage.

Examinations from time to time are advisable for the detection of any tendency to relapse, induced by uncontrolled factors which have increased the lesion in the gland and called for renewed efforts and an increased dosage.—*The Hospital*.

A Modern Idea of Gout.

One is nowadays so used to repeated summaries of our position in relation to acute infections, necessary owing to the extraordinary speed with which modern experimental work has lately progressed, that there is some risk of forgetting the more homely pathological states which in the past filled a large part of the list of family ailments and demanded then; as now, much attention from the home practitioner. Coming at this time, a small volume on Gout, by Dr. Berkart, and published by the Oxford University Press, gives not only a needed reminder of our lack of exact knowledge, but also a useful synopsis of available treatment for the conditions.

Several of his points are well worthy of attention, not for the novelty of their character, but for the attack which is made on those fixed ideas which still surround gout and many similar subacute states. A diagnosis of gout must not necessarily be the signal for immediate change in the patient's mode of life unless this has some obvious faults. The question of feeding is chiefly important in that thereby can the patient's health and bodily tone be improved, his metabolism quickened, and lethargy or obesity reduced, but each case involves its own problems and must be judged by its own standards. There is the too well-known experience that vegetarianism will suit not more than a limited percentage of people and benefit still fewer. Similarly the non-gouty diet shows extreme variations in its effects.

In the instance of alcoholic drinks, nothing is as yet ascertained whether and in what manner they affect the formation and excretion of uric acid. The effect of taking of alcohol appears to show an exact parallel to the uncertain effect of the meat-free diet. In some parts of Germany gout is unknown. Beer would be injurious to those of the gouty who are gross or inclined to obesity, while it is harmless or even beneficial to the emaciated, whose body needs all possible nourishment and strength.

And here one may recall the fact that gout is always accepted as a disease of the robust and overfed, but reflection will prove that in hospital practice any number of instances are seen in the older inmates, where an

extremely different picture is displayed. It would almost seem that gout is a disease of low, stagnated vitality, that a case may best be treated by momentarily forgetting the local condition and unravelling the mystery of the patient's imperfect physical state. Somewhere his machinery is inefficient, and where, apart from actual senility, can the weakness be found? Improve, aid, or repair this and the power of gout, if real gout it be, will be, largely neutralised.

Then our usual palliative, internal and external methods of supposed uric acid solution, may be marshalled. Dr. Berkart, in his summary of these, does justice to each and allows it whatever credit it can rightly claim, but, nevertheless, the reading of this booklet suggests that gout should be viewed as a local pathological condition aggravated, if not caused, by stagnation of the human machine, and hence to be attacked along lines of rational hygiene and health rather than by the physic of old times.—*The Hospital*.

The Hysterical Element in Organic Disease and Injury of the Central Nervous System.

BY

BY LIEUT.-COL. ARTHUR F. HURST, F. R. C. P.,
AND MAJOR J. L. M. SYMNS.

It has long been recognised that hysterical symptoms may be grafted upon symptoms caused by organic disease. The writers' experience with soldiers during the past 4 years has shown that this association is much more common than has generally been supposed. There are few symptoms caused by organic disease which are not liable to be aggravated and perpetuated by suggestion, so that it becomes necessary in almost every case of impaired function to look for an hysterical element which can be removed by psychotherapy. Hysteria may account for a large proportion of the incapacity in a patient presenting such definite signs of organic disease that it might easily have been presumed that the entire condition was organic. The writers now test every case, in which it is at all conceivable that an hysterical element is present, by the only means possible, the effect of psychotherapy. No other means are available, as, on the one hand, organic physical signs do not exclude the possibility of hysterical symptoms, and, on the other hand, it has been proved that the supposed stigmata of hysteria are not present until they have developed as a result of the unconscious suggestion of the observer, who may produce them in suggestible individuals suffering from organic disease just as easily as in those suffering from hysterical disorders.

Disseminated Sclerosis.

It is not uncommon to find an extensor plantar reflex, ankle clonus, exaggerated knee-jerk, and absent abdominal reflex in a patient who seeks advice for some early symptom of disseminated sclerosis, such as impaired vision or unsteadiness of the hands, in spite of the fact that no symptom of paraplegia is yet present. These physical signs are accepted as absolute proof that the disease has involved the pyramidal tracts, and experience shows that sooner or later the legs will become weak and that severe spastic paraplegia will ultimately develop. *Thus signs of organic disease of the pyramidal tract may precede the onset of symptoms.*

Many patients, especially women, suffering from disseminated sclerosis have a peculiar state of mind, often erroneously called hysterical, one feature of which is abnormal suggestibility. It is not surprising, therefore, that hysterical symptoms—symptoms produced by suggestion and curable by psychotherapy—may develop. When the lesion of the pyramidal tracts in such a suggestible individual becomes sufficiently marked to cause some stiffness and weakness in the legs, the stiffness and weakness may give rise to the idea of paralysis, and hysterical paraplegia may rapidly appear. At this stage it may be impossible to make an accurate diagnosis for, we have a case of hysterical paraplegia with all the signs of organic paraplegia, although only a small proportion of the incapacity is a result of the organic lesion.

Such a patient may be given a rest cure, injections of mercury, injections of salvarsan, or one of the numerous other drugs from time to time advocated for disseminated sclerosis, only to be rejected by others, who have used them with less faith and therefore with less effect. The treatment, whatever its precise nature, is really a form of psychotherapy, and the hysterical paraplegia disappears, leaving behind the physical signs of organic paraplegia and the slight weakness and stiffness, which were present before the onset of the hysterical symptoms.

This seems to be the chief explanation of periods of more or less spontaneous improvement, so characteristic of disseminated sclerosis. It applies equally to the improvement of other symptoms, such as amaurosis; the slight impairment of vision, which results from the earliest changes in the optic nerves, sometimes even before any change can be recognised in the discs, suggests a grave loss of vision to suggestible individuals, so that almost definite complete blindness may occur long before the optic atrophy. The vision may greatly improve again either spontaneously or recently from treatment, but really from suggestion.

It is common in disseminated sclerosis to obtain a history of temporary weakness of the legs or temporary blindness some months or even years before the disease is recognised. The temporary symptoms have generally

been regarded as hysterical, but the physician who sees the patient now for the first time is inclined to say that the old diagnosis was incorrect, as the symptoms must really have been organic in origin and a part of the disease now present. The truth is that the early symptoms were probably to a great extent hysterical having been suggested by the slight incapacity caused by the organic disease. The hysterical element disappeared, leaving the slight organic element. The early diagnosis of hysteria, though only partially correct and in one sense unjust, was to the patient's advantage if it led the physician to use psychotherapy, which would rapidly remove the hysterical symptoms.

No satisfactory explanation has ever been offered of the remittent character of the symptoms of disseminated sclerosis. It is possible that a period of rapid deterioration corresponds with the rapid development of new areas of disease in the central nervous system, and that such a period may be followed by another of much slower development of the disease, during which changes may occur in the rapidly formed areas of disease, which result in their contraction, so that nervous tissue which was originally thrown out of action by compression recovers its functions. This probably explains the temporary paresis of one or more of the external muscles of the eye, and some of the slighter variations in the degree of paralysis of the limbs and of the impairment of vision, but it is hardly conceivable that sufficient change should occur in the central nervous system to account for the conversion of complete paraplegia into slight stiffness and weakness of the legs, or of total blindness into slightly indistinct vision. The writer's explanation also makes it easy to understand why spontaneous improvement occurs more often in females than in males, and in the neurotic than in less suggestible individuals.

Tabes.

As in the lateral columns, disease of the posterior columns may produce signs before any symptoms have developed, and the earliest symptoms may be exaggerated as a result of the development of hysterical paralysis on the top of the organic incapacity. It is common to find lost ankle-jerks with feeble or lost knee-jerks and some impairment in the vibration-sense over the bones of the legs in patients who have sought advice for gastric or other crises, impaired vision, impotence, or disturbances in micturition, which are due to early tabes, but who have so far had no ataxy or other symptom of disease of the posterior columns.

Physical signs of organic disease of the central nervous system are thus qualitative and not quantitative.

In numerous cases much of the incapacity in a man obviously suffering from tabes is proved to be hysterical by its rapid disappearance under

psychotherapy, the symptoms having been suggested to the patient by the slight incapacity resulting from the actual organic disease. In addition to this auto-suggestion hetero-suggestion often plays a part, symptoms being unconsciously suggested by the medical examination. It is, for example, very easy to suggest Romberg's sign.

Hysterical paraplegia and hysterical Romberg's sign in a man with tabes.—Driver B., aged 28, was blown up by a shell at Salonika on Jan. 19, 1917. On regaining consciousness he found he was unable to walk. In spite of treatment with electricity, hypnosis, and massage at Malta he remained paraplegic. When admitted to Netley on Jan. 8, 1918, the paraplegia was found to be hysterical, and he quickly learnt to walk normally. By Feb. 13 he was feeling well in every way and would have been sent to duty but for the condition of his pupils. The right pupil was larger than the left; it was oval and reacted neither to light nor accommodation. The outline of the left pupil was also slightly irregular and gave a typical Argyll Robertson reaction. The knee-jerks and ankle-jerks were normal.

His medical officer, thinking that he might have tabes, asked him whether he had ever felt dizzy or likely to fall when closing his eyes. He answered in the affirmative, and on being tested for Romberg's sign gave a well-marked reaction, which became more marked at subsequent examinations. This was subsequently recognised as being anomalous, for the knee-jerks and ankle-jerks were normal, showing that there could not be any great loss of muscle sense in the legs. It was concluded, therefore, that the Romberg's sign had been produced in the course of examination. This view was confirmed when every trace of the sign disappeared two days later as a result of counter-suggestion. The Wassermann reaction of the blood and cerebrospinal fluid was strongly positive, so that there can be little doubt that the pupil changes were due to early tabes, although the tendon reflexes were normal.

The improvement in the gait of tabetic patients from the methods devised by Frenkel is not always solely due to educating the patient to use his eyes to help his deficient muscle-sense, and to make the most of such muscle-sense as he still has. The results are sometimes too rapid and too dramatic, and can scarcely be explained except as a result of suggestion, the incoordination being largely hysterical and the nature of the incapacity having been suggested by the slight degree of unsteadiness actually caused by the organic disease.

A man, with all the signs of tabes, had been unable to walk for 6 years. He was brought in a chair to the Guy's Neurological Department at 9.30 a.m. After he had been examined he was told that he would probably learn to walk again if he carried out certain exercises which were shown to him. He continued to practise these, and by 12 o'clock he had improved so much that

he could walk the length of the room, and in a week he was walking about normally.

This was regarded at the time as a triumph of re-education of the deficient muscle-sense, but the re-education must have been of the patient's mind—psychotherapy.

Friedreich's Ataxy.

The following case is a typical example of Friedreich's ataxy, and until recently the writers would have accepted all the symptoms as the result of the organic changes in the central nervous system. They would have said that Friedreich's ataxy is one of those nervous diseases in which very little can be done, and that the patient would slowly and steadily get worse. But so convinced have they become of the enormous importance of looking for an hysterical element, even in the most unlikely places, that they treated the patient as if his incapacity was hysterical, although nothing in his mental or physical condition gave any grounds for this. The result justified the treatment, and instead of being sent home as a helpless cripple, he was discharged capable of earning a living in some light occupation for a time, although of course, the ultimate prognosis remains as hopeless as ever.

Hysterical ataxic paraplegia associated with Friedreich's ataxy.—Pte. B. 2 years ago gradually became unable to walk in the dark, but it was not until he was sent to France with a Labour Battalion in Oct. 1917, 6 months after joining the Army, that he had any difficulty in the daylight. He was stopped several times by the military police on suspicion of being drunk, as his gait was unsteady. After an attack of influenza in June 1918, the ataxy was much increased, and from this date he went out only in a bath-chair. The difficulty in walking then steadily increased up to the time of admission to Seale Hayne Hospital on Oct. 12, 1918.

Speech was slightly affected, and there were sudden changes of pitch, as in a voice that is breaking. He could scarcely do anything owing to extreme incoordination, and he fell frequently when he tried to walk without assistance. He was very unsteady on standing, and he fell immediately he closed his eyes. There was slight but definite kyphosis, and the plantar arches were abnormally high on both sides. The knee and ankle-jerks were absent. The plantar reflexes were difficult to obtain, but appeared to be extensor. When asked to pour water from a jug into a tumbler incoordination in the arm movements was seen and much water was spilt. The Wassermann reaction was negative in the blood and cerebro-spinal fluid. Friedreich's ataxy was diagnosed.

Treatment by persuasion and re-education was given, as it was suspected that the ataxic gait might be partly functional. He learnt to walk fairly well on the first day of treatment, and further improvement followed.

Exercises practised for half an hour 3 times a day. After a week the gait was almost normal, and unsteadiness could be detected only when he changed his direction suddenly. The hands soon became so steady that he developed into a competent potter.

Injuries and Acute Diseases of Brain and Spinal Cord.

Just as the physical signs of an organic lesion of the pyramidal tract may precede the development of paralysis due to the lesion, and may be associated with hysterical paralysis, persisting after the cure of the latter by psychotherapy, so may these signs persist after recovery from organic paralysis and be associated with hysterical paralysis, which develops as the organic symptoms disappear.

Injuries and acute diseases of the brain and spinal cord may result in changes to a great extent evanescent. The vaso-motor disturbances and microscopic changes in the nerve cells, such as chromatolysis and eccentricity of the nuclei, disappear entirely; inflammatory exudation and oedema also disappear or leave only trivial permanent damage, and even hæmorrhages are absorbed to a great extent, the initial changes being thus much greater than the permanent results of the lesion. The initial changes may, however, be sufficient to block the transmission of nerve impulses and consequently to cause complete loss of function in the parts which receive their innervation from the affected portion of the nervous system. But the permanent results of the lesion may be so slight that no loss of function persists, although as in disseminated sclerosis, the damage may be sufficient to give rise to permanent organic physical signs. This is seen, for example, in the hemiplegia and paraplegia following syphilitic endarteritis, which have been treated early and thoroughly, and in the spontaneous recovery in some cases of poliomyelitis.

In the majority of cases the gradual improvement in the lesion is accompanied by a corresponding functional improvement. Occasionally, however, especially among suggestible individuals, such as soldiers who are mentally and physically exhausted from the stress and strain of active service, the patient may not realise that the lost functions are returning. The initial incapacity gives rise to the idea of permanent incapacity by auto-suggestion, often aided by the unconscious hetero-suggestion of the physician, and whilst a less suggestible man might recover the use of his paralysed limbs in a few days, the paralysis is perpetuated in the suggestible man by the development of an hysterical element, which can be removed by psychotherapy. In such a case the paralysis remains complete, and although at first it is entirely organic in origin, the proportion of the organic to the hysterical element in its make-up becomes steadily less, and in some cases a stage is reached in which the incapacity is almost entirely hysterical and independent of structural change, although the latter may still be sufficient to give rise to

physical signs. A condition may thus occur which is primarily organic, but is ultimately hysterical. Everything of organic origin may disappear, or the residual lesion may be sufficient to produce organic physical signs without any loss of function, or both organic physical signs and some loss of function.

Diagnosis.

The numerous symptoms and physical signs which are supposed to help in the diagnosis between organic and hysterical paralysis fall into three groups. The first group consists of the phenomena which afford visible and conclusive evidence of structural changes in the nervous system, such as optic atrophy and neuritis, and abnormal cells in the cerebro-spinal fluid. Equally conclusive are the second group of physical signs—those which are entirely beyond voluntary control, such as the Argyll Robertson pupil, the reaction of degeneration, and loss of knee and ankle-jerks. The third group of signs are those which could be imitated more or less accurately by anyone who had studied them, but which would not be likely to occur as a result of auto-suggestion or be simulated by an ordinary malingerer, as he would be unaware that they accompanied the disease he believed or pretended that he had.

The signs belonging to the last group lose much of their value in distinguishing organic from hysterical paralysis, when the latter has followed organic paralysis, as the characteristics of the hysterical paralysis have been suggested by those of the organic paralysis. An ordinary individual who develops hysterical hemiplegia shows no paralysis of his platysma muscle (Babinski's platysma sign), because he is likely to be unfamiliar with the action of the platysma, and being unaware of its existence would continue to use it when the rest of the same side of the face was paralysed, but if the hysterical paralysis were a sequel of an organic paralysis the characteristics of the latter, including paralysis of the platysma, would be perpetuated.

Thus in hysterical hemiplegia and paraplegia following organic hemiplegia and paraplegia respectively most of the third group of physical signs, which are regarded as characteristic of organic disease, may persist. Being caused by suggestion, they are just as much a part of the hysterical condition as the paralysis itself, and like the latter they are completely removable by psychotherapy. Thus the writers have seen cases of organic paralysis followed by hysterical paralysis in which the platysma, pronation and fan signs of Babinski, combined flexion of the thigh and pelvis ("Babinski's second sign"), ankle clonus quite indistinguishable from that present in organic disease, Raimiste's and various other signs, were present; but the condition was none the less hysterical, as the paralysis with these signs disappeared rapidly under psychotherapy.

The diagnosis of such cases may thus be extremely difficult, as hysterical paralysis following organic paralysis may not only be associated with permanent physical signs of organic disease, such as the extensor plantar reflex, caused by the residual organic disease, but also with the accessory signs supposed to indicate organic disease, but which they themselves be hysterical, being produced by suggestion and removable by psychotherapy.

Treatment.

There is a widespread tendency to adopt a waiting attitude in the treatment of acute organic nervous diseases which is sound if confined to the early stages, but becomes dangerous if continued longer. The natural tendency of most acute diseases is towards recovery, but the functional capacity does not always tend to return *pari passu* with structural recovery, unless the physician makes use of psychotherapy in combination with re-education from the earliest possible moment. In organic hemiplegia following a head wound or an acute vascular lesion there is no reason why passive movements should not be commenced on the day of onset, and as soon as the patient's general condition permits he should be encouraged to attempt voluntary movements. When the hemiplegia is associated with aphasia re-education of speech should be begun at the same time. Treatment of this kind, in which psychotherapy is preventive rather than curative, leads to a maximum of recovery in a minimum of time. The same is true in such conditions as acute poliomyelitis, in which there is often too great a tendency to rely upon mechanical means, such as massage and electricity, and to forget the psychical side.

The following are striking examples of severe symptoms resulting from organic injury or disease being perpetuated by the grafting of an hysterical element on the original organic incapacity. In the first case the patient was regarded by everybody who had seen him as suffering from incurable organic hemiplegia, but recovery under psychotherapy was almost complete.

Combined hysterical and organic hemiplegia of 2 years' duration following nephritis; almost complete recovery under psychotherapy.—Pte. R., aged 29, reported sick on Sept. 29, 1916, when he noticed oedema of his legs. Nephritis was diagnosed and he was sent to a hospital. On Oct. 1, he had several fits and was unconscious for a few hours. When he recovered consciousness he was suffering from severe right hemiplegia, involving the face, arm, and leg, and he was also aphasic. He was transferred to England, and in July 1917, as his urine was now free from albumin, he was transferred to a neurological hospital in London. The physician under whose care he remained for more than a year reported that on admission "there was complete right hemiplegia with late rigidity and aphasia and also facial paralysis on the same side. Wassermann reaction negative. Complete anaesthesia on the right side, tactile and thermal. No sphincter trouble.

All deep tendon reflexes much exaggerated, right greater than left, well marked ankle clonus right side; plantar reflex indefinite; tongue deviation to paralysed side. Later he developed spastic contracture of the right limbs. After a time he regained power of speech with re-education. In May 1918, tenotomy was performed to overcome the flexion of his right knee. As this was not successful, his leg was subsequently twice moved forcibly under anaesthesia. The physician and several colleagues who saw him in consultation agreed that the hemiplegia was entirely organic.

In Aug. 1917, he was transferred to another neurological hospital in London. There was still no improvement when he came under the writer's care at Seale Hayne Hospital in Oct. 1918. The right leg and arm were totally paralysed and absolutely rigid, the elbow, wrist, and fingers being flexed and the knee semi-flexed. The face, including the platysma, was paralysed, but, as in ordinary organic hemiplegia, the upper part was not involved. The deep reflexes of the arm and leg were much exaggerated on the right side and slightly exaggerated on the left and well sustained; regular ankle clonus was present. The abdominal reflex was absent on both sides. The plantar reflex could not be obtained owing to the extreme degree of spasticity.

The spastic paralysis was treated by persuasion and re-education and in 2½ hours the patient was able to extend his leg and arm and move them slowly in all directions. At the end of another hour he was able to stand by himself and next day he was able to walk. This result was obtained without causing any pain, in spite of the extreme rigidity. The exaggerated deep reflexes and ankle clonus remained unaltered, and an extensor plantar reflex was now obtained on the right side.

An attempt was next made to overcome the facial paralysis, and in 10 minutes there was marked improvement. After 45 minutes' treatment the facial paralysis had disappeared and the platysma was contracting normally.

In Jan. 1919, he could use his right hand for all ordinary purposes—e. g., writing and needle work—and he walked with only a slight limp.

Hysterical hemiplegia with persisting signs of organic disease following concussion by a shell explosion cured by psychotherapy after persisting for 8 months.—Pte. T., aged 22, was admitted for left hemiplegia, which developed as a result of being blown up by a shell 8 months before. He could stand only with assistance, and was quite unable to walk. There were definite signs of an organic nervous lesion; the left plantar reflex was extensor, the abdominal reflex was absent, the ankle, knee, wrist, and elbow-jerks were much exaggerated on the left side, and well-sustained ankle clonus was present.

In spite of this it was decided that the condition was probably to a large extent hysterical, and he was treated by vigorous persuasion and re-education.

tion. Within an hour he was made to walk and run, but it took 5 or 6 days to develop a normal walk and a natural carriage of the left arm, which was at first held in front of his left thigh. A fortnight later a distinguished neurologist who was visiting the hospital watched him playing billiards, and was asked to guess which had been the hemiplegic side, but the functional recovery was so complete that he was unable to do so, although all the physical signs of organic nervous injury were still present and had not altered when discharged, feeling perfectly well, 2 months later—*Lancet*.

SURGERY.

INOPERABLE CANCER OF THE UTERUS.

ITS FREQUENCY AND A REMEDY.

CANCER attacks the uterus in a serious proportion of our female population, occurring commonly as an affection of the neck or cervix, and less commonly in the corporeal portion of the organ.

From a study of the cancer statistics at large it appears that the uterus is primarily attacked in 30 per cent. of the female cases affected, the disease being more frequently met with in this than all other sites taken together. The root cause, in common with that of other cancers, is not fully understood, but many clinical pathologists incline to the belief that multiparity, with its attendant lacerations and inflammations of cervix, is a definite predisposing factor.

OCCURRENCE OF INOPERABLE GROWTHS.

Unfortunately, the majority of uterine cancers are inoperable at the time of diagnosis, due to the fact that the growth has to permeate through a relatively large area of uterine tissues, before attacking any structure which will give rise to pain, and warn the patient of her condition. Once the growth has elicited these symptoms an inoperable stage has usually been reached, the cancer having extended forwards into the base of the bladder, or backwards into the anterior wall of the rectum, in either case the fixity of the uterus and the infiltration of these vital structures will preclude any possible chance of radicle operation. Earlier symptoms of uterine cancer are the occurrence of a hæmorrhage having no relation to menstruation, or else the presence of a thin, watery discharge which may be bloodstained.

Unfortunately women have never been educated to appreciate the serious portent of these early indications, their gynecological and obstetric history has probably contained many like happenings, and they are wont to disregard them.

EDUCATION OF THE PUBLIC.

Mr. T. G. Stevens well says in his admirable manual on the diseases of women, "Women of all ages, parous or nulliparous, married or single, of all nations and creeds, invariably object to a vaginal examination being made by the family practitioner; but, in the face of an unusual hæmorrhage, having no relation to menstruation, it is his bounden duty to explain the importance of the examination, and to insist upon making it."

"He should on no account prescribe some treatment, local or medicinal without having made the examination. If medical men would absolutely refuse to treat patients with hæmorrhage, unless an examination is made, far more lives would be saved by timely operations for cancer of the cervix. A very great responsibility rests on the shoulders of the family practitioner in this matter, for it is only by an early diagnosis made by him that the operating surgeon will ever have an opportunity of saving lives by operation. Even in the hospital out-patient departments, really early cases are but seldom seen, partly because the patients neglect slight hæmorrhages, but also partly because they have been treated by doctors for some weeks previously."

This puts the matter in a nutshell, but whence this great dislike for examination? It is the product of the erroneous teachings of our domestic life, and its results are almost as serious as those of that other great hidden disease—syphilis. We would suggest that education in the symptomology of malignant female diseases should be taught to every woman, and inasmuch as education cannot be properly imparted by parents mostly ignorant of these matters, they should be taught in our schools and colleges at the time of puberty.

Once the public were correctly educated in these matters they would at once communicate their symptoms to the family doctor, the case sent to a gynaecologist for operation, and the opportunity of radical cure given to the sufferer. In the United States of America the American Red Cross have devised and are putting into practice a scheme of popular lectures and leaflets, with this end in view.

EDUCATION FOR THE MEDICAL PROFESSION.

There is probably no branch of medicine in which the general medical practitioner is less well versed than gynaecology; this is perhaps the fault of scanty tuition in past decades, or impossibility for a hard-worked doctor to keep *au fait* with the modern developments of this science.

Quite recently the present-day teachings of gynaecology and obstetrics have been the subject of several able papers read before the obstetric section of the Royal Society of Medicine, and doubtless an improvement will ensue.

benefit from them; but, in any case, better teaching will only give immediate benefit to the fortunate hospital students, and not to the whole bulk of the profession.

A visit to the out-patient departments at any great London hospital will reveal the fact that some medical men do not sufficiently realise the importance of the early diagnostic symptoms in many cancerous conditions, and more especially those which affect the uterus. Education in these and other necessary subjects should be promulgated by a central body such as a Ministry of Health, either by a scheme of periodical post-graduate instruction, or else by a system of circularisation.

We feel that advancements in medical knowledge should not be the property of a minority, but that information should be scattered broadcast throughout the ranks of the whole profession, and we are sure that learning thus disseminated would affect no disease more beneficently than that of uterine cancer.

In conclusion, we may say that few cancers have a more distressing and hopeless course, and we maintain that any means which will reduce the numbers of these inoperable cases are fully justified.—*The Hospital*.

OPHTHALMOLOGY.

Quinine Amblyopia.

H. M. Traquair—The recent prevalence of influenza and pneumonia makes it opportune to call attention to the possible harmful effects of quinine upon the eyes. Burney Yeo (*Manual of Medical Treatment*) praises it highly in the treatment of influenza. He says: "Even if it should give rise to some headache or slight deafness, it is far better to bear with these trivial inconveniences than incur the risk of serious toxic after-effects." The risk of toxic after-effects of quinine is apparently not contemplated. However, considering the amount of quinine which must be consumed every year, permanent visual damage is rare. The writer recently observed the following 3 cases:

A woman, aged 23, had been feeling "run down" and had been taking quinine as a tonic—about as much as would go on a threepenny bit twice or thrice a day for 3 weeks. Then on one occasion rather more than a teaspoonful was taken in one dose. (These amounts correspond to about 1 gr. and about 20 gr. respectively of the sulphate). Stupefaction, tinnitus aurium, and loss of sight ensued. Thirty hours later the stupefaction and tinnitus were better but vision remained "quite gone" for a week. Examination 2 days after the quinine had been taken showed loss of perception of light; pupils dilated and inactive. The fundi were normal. Vision gradually re-

turned, and 4 months later was 6/24 in each eye, fields of vision much contracted, pupils unequal but reacting to light. After nearly 8 months, vision was 6/9 partly with the right and 6/9 with the left eye after correction for astigmatism. The pupils were of normal size in ordinary daylight, but tended to dilate slightly after primary contraction to light. The fields of vision were greatly contracted even for comparatively large objects. Central colour vision was good. The fundi showed optic atrophy, with much contracted retinal vessels. She complained of bad vision in the dusk and of inability to "see if things fall."

A woman, aged 28. In May 1918, she had "a bad, almost hopeless pneumonia." Hypodermic injections (she was not able to swallow) containing 15 gr. of quinine-urea hydrochloride were given every 4 hours, commencing late on the first day and ceasing early on the third day. In all, 8 injections were given. Tinnitus began after the third injection and next day she was very deaf. Early the following morning after the last injection vision became very dim, and a few hours later total blindness supervened. The quinine was stopped and hydrobromic acid given. Eight days later perception of light began to return, and a week afterwards colour could be detected. Improvement continued for the next 3 weeks, but was not noticeable after that time. When seen 3 months later the vision of the right eye was 6/6 partly and of the left eye 6/36. The fields of vision, especially for colour were much contracted. The optic discs were pale and the retinal vessels constricted. She complained of "dimness" over the eyes, and when last heard of described her vision as "very unsatisfactory" and not improving.

A man, aged 53, had influenza in July 1918. Quinine was taken for one night only every 4 hours in cachets containing 2 to 5 gr. each. Tinnitus soon came on, and when he got up after 2 or 3 days, he had to be led about, as he was unable to see. As far as could be ascertained, the total amount of quinine consumed in about 12 hours was under 20 gr. Two months later he was seen at the Royal Infirmary. His vision was 6/9 in the right eye and 6/18 in the left. The fields were contracted. A trace of pallor was noted in the optic discs, especially the left. No reduction in size of retinal vessels was seen. A month later vision was 5/12 in each eye. In bright light the pupils were equal and normal in size; in subdued light the right pupil was rather larger than the left. Both pupils contracted well to light but the right dilated slightly after primary contraction. The fields of vision were greatly contracted, especially the right. The fundi showed pallor of the optic discs and constriction of the retinal vessels, more marked on the left side. His chief complaint was of difficulty in reading.

Two of the cases were associated with the recent epidemic of influenza and pneumonia. In one case the amblyopia was caused by a relatively small

dose, in the other two comparatively large, but by no means massive, doses had been received. The first symptom was tinnitus. Blindness was quickly reached and slowly recovered from. The patients were left with good central vision but restricted fields, partial optic atrophy, and contracted retinal vessels. It is noteworthy that in spite of the good central vision all the patients complained of inability to see satisfactorily, showing the importance of para-central and intermediate zone vision. An interesting point, bearing on the pathology is exemplified by Cases 1 and 3. The fundus changes had evidently developed after the blindness and had continued to develop while vision was improving. In Case 3 also the fundus changes did not correspond to the visual symptoms in the two eyes. Two views have been advanced as to the mode of production of quinine amblyopia—one that the action is primarily vasomotor on the retinal vessels, the retinal cells and nerve fibres suffering secondarily, and the other that the toxic action is primarily on the retinal cells, the visible fundus changes being secondary. The late development of the optic pallor and vascular constriction has been noted by several observers and is in favour of the second view.

The dose need not be excessive or even large. Cases are recorded in which amblyopia followed doses as small as 22 gr. in 3 days, 15 gr. in 24 hours, 12 gr. in one dose. On the other hand, enormously larger doses are commonly taken without harm. Idiosyncrasy evidently plays an important role, and it is not possible to state definitely what constitutes a dangerous dose of quinine. There is good evidence that an absolute or relative overdose may produce a state of increased susceptibility, and persons who have once suffered from quinine poisoning should use only minimal doses or avoid the drug altogether.

The symptoms of cinchonism—tinnitus, a feeling of fulness in the head, and partial deafness—indicate that more of the drug than is safe is being absorbed. Patients should be warned to discontinue the drug on the development of tinnitus. These symptoms precede actual quinine poisoning when it occurs. Cases are recorded, however, in which the latter developed very suddenly. The diagnosis of quinine poisoning should not be difficult. Vision is lost, the pupils are dilated and inactive, hearing is affected, headache, drowsiness, and even stupor may be present. Such symptoms may be confounded with the results of the disease under treatment. The ophthalmoscopic signs are pallor of the optic discs and constriction of the retinal vessels—features which, as already stated, may not appear for a little time. Later, when some vision has returned, the contraction of the visual fields can be made out. The prognosis is usually good as regards central vision, but bad as regards peripheral vision. Only in mild cases is completely

satisfactory vision recovered, while permanent blindness results in only the most severe cases. Improvement is fairly rapid at first and then goes on more slowly for some months or possibly even longer.

Treatment, apart from stopping the quinine, is of little avail. A number of drugs has been advocated from time to time and, as is often the case, their diversity indicates their inefficiency. Strychnine, caffeine, hydrobromic acid, digitalis, iodides, and other drugs have been recommended. Measures directed towards increasing the retinal blood-supply, such as the arcumbent position or the exhibition of nitrites, appear somewhat more rational, but their value is doubtful. The main point is that quinine emphyobia can be recognised and checked in its early stages by the general practitioner. Specialists see the cases too late to be of any service.—*M. Review.*

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following Journals.—

The Bristol Medico-Chirurgical Journal. The American Journal of Clinical Medicine. The Good Health. The Indian Medical Gazette. The Practical Medicine. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Monthly Cyclopædia of Practical Medicine. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Medico-Surgical Journal. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. The Canadian Medical Association Journal. The Calcutta Medical Journal. Le Monde Medical.

THE ANTISEPTIC

JUNE, 1919.

Diet in Student Life.



OTH diet and student life are in themselves important in national and individual evolution. But diet in student life is the most important. During this period, the growth and development of the body take place rapidly. Hence tissue building proteids such as dhal, milk, meat, eggs, etc., are the most suitable for this age. In manhood, the period for most

active work, one requires the greatest amount of energy and consequently energy producing food like the fat class should predominate. In the decline of life, the non-stimulating carbo-hydrates-starches are the best and the safest. The above diets are only mentioned as the chief elements in the dietary of these periods and not as exclusive elements. It is a fully recognized fact that proteid, the ideal food for the diet for the student life, is very much wanting in our dietary. It is during the first twenty-five years only that the body grows. When this most important period of life is spent, in the midst of all the strain and stress incidental to student life of the present day, with defective food of low proteid percentage, one could easily imagine the deleterious effect it must produce upon our national development.

Regarding the quantity of food, overfeeding in the growing stage is much less harmful than under-feeding, for at that elastic age the system can deal with excess. The diet of our students, though bulky, is very poor in the proteid element as we have observed. Taking of small quantities of food at short intervals is the best. It introduces into the body in this way a far greater amount of nourishment than bulky meals at longer intervals. The food is better and quicker digested and the body remains lighter. Students should be taught not to eat and drink together at heavy meals, as the digestive juices are diluted by large draughts of water. The mid-day meal of students should be light but of concentrated nourishment and dry. This is necessary because immediately after they have to attend the day's work. The evening meal should be the most sumptuous and should never be taken later than 8-30 p. m.

Most of the students are in the habit of gulping down food without proper mastication in the hurry to go to school. Students should be taught that gulping food in this way causes indigestion with its characteristic symptoms of distress and depression and that mastication does what nothing else can do elsewhere in the whole of the digestive tract. Another pernicious habit among the students is to run to school immediately after a hurried meal. This habit is especially harmful in the early growing period of life. As a result of these defects in our dietary the digestive tracts of most of the school-going population are rendered abnormal—the stomach gets dilated and weak and its secretions are vitiated; then follows intestinal catarrh, ending in torpidity of the liver. Constipation results, followed by toxæmia and nervous debility and incapacity for concentrated study.

In our opinion, this important subject of "diet in student life" should be earnestly taken in hand by the different heads of educational institutions. It is beyond dispute that the food question is the most important to the individual, the society and the state, as well as the problem of education in student life. We are sure that it is the bulky food deficient in proteid nourishment, thereby causing bodily and mental debility that brought our national apathy for worldly life and advancement. We also think the same uncongenial dietary is also to some extent responsible for the present disturbed condition among our students with so many undiagnosed and unrelieved pressures and privations in life.

Business Notices.

The Editor's Office is at RAMABHAVAN, Poonamallee High Road, MADRAS.

The Manager's Office is at 323, Thambu Chetty St., Georgetown, Madras.

All literary communications and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7-8 or 10 s.,
Half page Rs. 4-8 or 6 s., a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

THE ANTISEPTIC.

Vol. XVI.]

JULY 1919.

No. 7.
Annual Sub-
scription Rs. 5

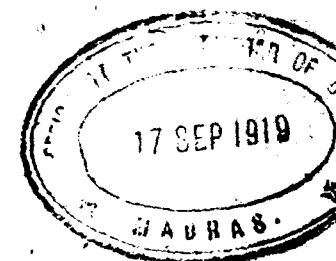
Original Articles.

* INFLUENZA.

BY

S. WYARD, M. D., M. R. C. P.

(Continued from page 219.)



It is probable that a simple pleurisy may develop subsequently into an empyæma.

5. In no case that came under the writer's personal observation did an *empyæma* complicate influenza but such a thing was by no means uncommon in some series of cases.

6. *Pulmonary abscess.* Abscesses in the lung, generally small and always very numerous, were sometimes found as stated above (*vide* § 4) but are of no clinical importance. It is unlikely that once suppuration takes place the patient ever recovers and apparently abscess formation is a further stage of broncho-pneumonia where the infection is not so virulent as to cause death in a few days and is too virulent for the patient to overcome it. There are no symptoms nor signs by which it can be recognised and diagnosis is only possible post mortem.

7. *Pericarditis.* A slight pericardial effusion (6 ozs) was found post mortem in one case of this series and was not diagnosed ante-mortem. The patient was extremely ill, intensely cyanosed, breathing was very rapid about 60 per min.—he was unable to lie in bed and was delirious. The area of cardiac dulness was increased and thought due to right sided dilatation. Venesection produced a very slight and transient improvement. A plastic pericarditis was never found nor was pericardial friction ever heard.

8. *Septicæmia.* Streptococci have been recovered from the circulating blood in a considerable number of cases ante-mortem and the majority of

*Specially contributed to the *Antiseptic*.

cases so examined post mortem but in both cases only if complicated by broncho-pneumonia. The sequence of events cannot be stated with complete certainty, *i. e.*, whether septicæmia produces broncho-pneumonia or *vice versa* but the fact that the later in the disease the blood be examined the greater the probability of a positive finding would indicate the latter theory as correct and that the blood infection is a terminal phenomenon. It may therefore be fairly confidently stated that streptococci spread down from the mouth, and thence to the lungs where they set up an inflammation leading to consolidation. At the same time the permeability of the vessel walls in the lungs is greatly increased as shown by the presence of hæmorrhages and a hæmorrhagic exudate scattered throughout the organ. By this means the organisms progress still further and reach the lumen of the pulmonary capillaries whence they are distributed to the rest of the body. It gives rise to no distinctive signs and symptoms. Infarcts are never found nor thromboses of any vessel.

9. *Meningitis.* This complication again has never occurred in the present series but has been described and Pfeiffer's bacillus recovered from the cerebro-spinal fluid. Meningismus is not very uncommon. The patient complains of headache and pains in the neck and back. There may be some slight stiffness of the neck. The onset may be marked by vomiting. These signs clear up in 24 to 36 hours and it becomes clear that the case is not one of meningitis.

10. *Nephritis.* In some epidemics this has been a frequent complication but was rarely seen in the series of cases now under review. A number of these however showed renal signs the urine containing albumen and sometimes blood. The amount of both these substances varied greatly in different cases from a mere trace to a thick cloud on boiling for the former and from a few erythrocytes discoverable only by microscopic examination of the centrifuge deposit to a heavily laden fluid showing all the characteristic appearances of hæmaturia. The condition has been reported as persisting after recovery from the primary disease but as a rule clears up completely and the urinary changes are probably in many cases an expression of toxæmia rather than renal inflammation.

11. *Tuberculosis.* It is difficult to decide if this be post hoc or propter hoc but it is certain that influenza first calls attention to a number of cases of pulmonary tubercle. This was especially marked in the first 1918 epidemic in fact it was not noticed at all in the second. In the former 11 cases were admitted to hospital as influenza and proved to be tuberculosis by the finding of *b. tuberculosis* in the sputum. These all occurred in May, June or July. In 18 months before and after that time the total number of cases of phthisis admitted did not reach that figure. It seems therefore a fact that influenza either predisposes to pulmonary tuberculosis or lights up any latent focus of that disease.

12. *Mental.* As already stated more or less acute mental depression may follow upon an attack of influenza. Generally mild in character and only darkening the patient's outlook on life it sometimes reaches a higher degree so that suicide or murder or both are committed under its influence.

This list of complications is ample evidence for the dictum made above that influenza is serious only because of the complications to which it is liable. No case died of influenza alone—every fatal case suffered from one or more of these.

VII. *Diagnosis.* In times of epidemic the diagnosis of influenza is simple and few mistakes are made but at other times great difficulty is experienced if any real attempt be made at a reasoned opinion. So great are these difficulties, viz.:—ignorance of the causal organism and the lack of any distinctive features whether symptoms or physical signs—that diagnosis is often impossible. In consequence of this any fever the exact nature of which is undetermined is called influenza and while a certain number of such fevers must undoubtedly be that disease probably the majority are not. And in this position things must remain for the present.

With the outbreak of an epidemic however a change occurs. The cases generally conform to one type at any given time and difficulties rarely arise. Every case must be carefully watched for the appearance of complications—the colour, respiration, pulse and state of the lungs must be carefully examined and noted daily. In addition it is necessary to distinguish influenza from several other diseases of which the following are alone those which present any difficulty.

1. *Enteric.* This term includes typhoid and paratyphoid A and B fevers. The similarity between these and influenza may be extremely close as regards the general condition and appearance of the patient. Grave illness, epistaxis at the onset, fever, a slow pulse, dorsal decubitus with the knees drawn up, a low, muttering delirium and subsultus tendinum together present a striking picture which is common to all these diseases. Slight abdominal tenderness and an enlarged and palpable spleen may equally be present in any of them. On physical examination the presence of a rash over the abdomen will help to differentiate being in favour of the enteric group. No case of this series showed a rash of any kind. In the same direction points abdominal distention with tympanites. But the best means of diagnosis is by examination of the blood though this is not absolutely certain.

Blood-culture. The recovery of a typhoid group organism from the circulating blood is sufficient to clinch the diagnosis. A negative result, *i. e.*, no growth of any organism, is of no value.

Blood count. A leucopænia is almost invariable with typhoid and common with uncomplicated influenza. A leucocytosis indicated a septic complication and is in favour of the latter.

Widal's Reaction. The writer has had no opportunity of measuring this in uninoculated persons; every patient in whom the reaction has been performed had been inoculated with a mixed vaccine of typhoid and paratyphoid A and B bacilli within the preceding 12 to 18 months. The reaction is usually found specific: no alteration in the agglutinin content of the blood was demonstrated but in two cases the reaction failed. Both of these cases suffered from influenza and broncho-pneumonia presenting appearances that would justify either diagnosis. In "X" the agglutinins to A rose between the 5th and the 9th days of disease by 800%. He had however a leucocyte count of 18,000 on the first occasion and 13,000 on the second. "Y" rose between the 9th and 13th days by 2,000% to A and 500% to T. He moreover showed a leucopænia of 3,500 the first time and 3,100 the second. Unhappily both patients died and post mortem no evidence whatever of enteric could be discovered. A third Widal was likewise rendered impossible and it may be that could it have been carried out the true nature of the cases would have been revealed by this reaction as by other criteria in that the agglutinins would have been found diminished to their first value. It is of interest that in some cases of Trench Fever a similar rise is found (1) followed by an immediate fall to the old level whereas in enteric the rise is maintained or continued. The absence of a positive Widal is thus of value in eliminating the diagnosis of typhoid while the exact meaning of its presence has yet to be determined but probably when complete excludes influenza.

2. **Lobar pneumonia.** Physical signs in the lungs are at first minimal in this as in uncomplicated influenza. In both cases also the onset is sudden with fever. The diagnosis is however rarely in doubt. A rigor points to the former as does a pulse respiration ratio of 2:1. Pain in the chest and rusty sputum is not present in the early stages of influenza—the latter at no time—whereas they quickly make their appearance in pneumonia. The sputum of influenza has a faint red tinge and not brown. Finally the discovery of signs of consolidation of the lung within a short time of the onset of the disease is evidence of a lobar pneumonia such signs only appearing later (not before the second day at earliest and generally later still) in influenza.

The diagnosis of pneumonia arising in the course of influenza does not materially differ from that striking down a healthy person and if it be lobar in type presents no difficulty as a rule. Broncho-pneumonia may however be extremely difficult to diagnose. Since in many cases the consolidation

(1) French Fever: Reports of Commission Medical Research Committee American Red Cross O. N. IX 1918.

first affects the central portions and only later the superficial parts, sometimes it does not reach the latter at all, physical signs may be entirely wanting by which to establish the diagnosis. In such cases the only guide is furnished by the appearance and condition of the patient, Cyanosis and dyspnoea, a pulse respiration ratio of 2:1 or less and a leucocytosis will furnish information beyond which nothing is required. From observation made upon these two series of cases it has been impossible to find any means of differentiating between broncho-pneumonia and pulmonary oedema. Neither symptoms nor physical signs present any characteristic differences in the two conditions.

3. **Pulmonary Tuberculosis.** This subject has already been considered to some extent. Both diseases being essentially a broncho-pneumonia commonly more marked at the apices than at the bases no difference in physical signs is to be expected. Influenza is generally a more acute disease, the temperature is higher, the involvement of the lungs more extensive, the sputum is blood stained not streaked with blood and the patient is more ill. When the tuberculous process is so extensive as closely to simulate an influenzal broncho-pneumonia the duration of the disease will have been longer or tubercle bacilli will be demonstrable in the sputum. In many of the other cases also the finding of tubercle bacilli will clinch the diagnosis. The two diseases may of course co-exist.

4. **Cerebro-spinal Fever (meningococcal).** The necessity for differentiating from this disease may sometimes arise and may present at first some difficulty. Influenza extremely rarely gives rise to a meningitis so that in most cases where this question arises one is faced with a condition of meningismus. Here there is no pathognomonic symptom nor sign but the meningitic phenomena clear up within several hours leaving the diagnosis apparent. One symptom is of the very greatest importance viz:—difficulty in passing urine: it is very constantly present at the onset of cerebro-spinal fever but does not accompany meningismus. Very marked rigidity of the neck, a well marked Kernig and the characteristic rash will, when present confirm a diagnosis of cerebro-spinal fever.

If a true meningitis be present only lumbar puncture and examination of the cerebro-spinal fluid will reveal the true state of affairs. This examination should be both cultural and microscopical though the demonstration in films of Gram negative cocci is sufficient to eliminate influenza.

VIII. **Prognosis.** Influenza is probably never fatal apart from some complication. The majority of cases recover without permanent ill-effects. The appearance of any complication at once increases the gravity of the outlook. Pulmonary oedema is generally followed by death, broncho-pneumonia frequently. Naturally however in the latter case the severity

varies to some extent as the mass of the lung involved. A sign of the very worst import is diminution or loss of the cough reflex; if the cough be infrequent and ineffective, if the amount of sputum be small recovery rarely if ever ensues. The colour of the patient is also some guide—the dull, slate blue, livid cyanosis argues a fatal termination but death does not invariably follow. The congested, purple cyanosis is serious but somewhat less so. Those cases with early delirium do badly and when it comes on rapidly and persists recovery cannot be looked for. The pulse offers little help in this respect as frequently it remains good till within an hour or so of death. The change is often absolutely sudden from slow and of fairly good tension to rapid and weak or impalpable. Blood counts must be interpreted in conjunction with the clinical condition of the patient. In the absence of any pulmonary complication the leucocyte count is normal and is of no service: such cases always recover. Leucopenia especially if it persists and accompanying broncho-pneumonia is of ill omen, as also is a steadily rising leucocytosis. When the number of leucocytes first rises and then falls the patient is gaining the mastery over the disease and the prognosis is good.

XI. Treatment. This falls under two main headings—prophylaxis and therapeutics.

Prophylaxis. A consideration of the epidemiology of influenza will indicate the one and only certain method of escaping the disease—do not come in contact with a person suffering from it. But this is a council of perfection impossible of application except in the rarest instances. Where contact is necessary and when it is known, as in the case of physicians, nurses, etc., the wearing of a plain gauze mask over the nose and mouth is an almost certain preventive—at least it offers by far the best chance. If however Nicholle's finding in monkeys prove applicable to man (*vide supra*) this alone will not be sufficient and some form of mask and several have been devised—that protects the eyes as well as the nostrils and mouth is required. There is no other precaution to compare with this. At the same time it is well to avoid as far as possible any breathing, coughing or sneezing of the patient in one's face. Of general precautions none seems to be of much avail—the incidence and mortality of the disease was not obviously greater amongst men exposed to the hardships, fatigue and exposure of front-line trench warfare and those leading a more protected and comparatively easier life at the base. Nevertheless it would appear wise to raise in every way possible the resistance of the body to infection by warmth and proper feeding. Cold predisposes to invasion by organisms and to this end damp also tends though of itself having no effect. The wearing of wet clothes, sleeping in a damp bed is absolutely harmless provided that one keeps warm: but to keep warm is more difficult in these circumstances which should therefore be avoided.

Of drugs none is of any service. Quinine has been recommended and very extensively used. There is no evidence that it has any salutary action whatever and distilled water would be quite as efficient. Alcohol also has its adherents and its use has sometimes been urged because opsonic determinations have shown that phagocytosis is more active in the presence of minute amounts of this substance. The argument is so fallacious that it cannot really be called an argument. It is first necessary to show (1) that alcohol taken by the mouth reaches the blood stream unchanged. (This is probably a fact) (2). That in the circulating blood it exerts the same action as *in vitro*. With many drugs this action in the two cases is entirely different and there is at present no evidence that alcohol is an exception to this rule. (3) That phagocytosis is the main or even an appreciable factor in the protection against the virus of influenza. It is certain that in many diseases, *e.g.*, typhoid, it plays absolutely no part in the protection of the human body: it is probably equally negligible in the case of influenza. Moreover the chronic alcoholic is indisputably more liable to all infections and when infected is more liable to succumb than others and no evidence has ever been adduced to show that men who take alcohol in moderation are less prone to influenza than total abstainers.

Aspirin and other salicylates are quite valueless for this purpose.

Vaccines have been tried—the *b. influenza* alone or mixed with streptococci being employed. No data are yet available by which their efficacy can be judged.

Therapeutics. The patient must be confined to bed in a warm, well ventilated room and prevented from getting chilled in any way. If delirious constant watchfulness is necessary to prevent his getting out of bed or unclothing himself. The food should be light and nourishing. All sputum must be carefully collected and destroyed by burning. The faeces and urine are not infective. Constant and careful attention to the mouth is of the utmost importance; it must be kept moist by frequent sips of some liquid-water, imperial drink, etc., and clean by washing with a mildly antiseptic wash *e.g.*, Glyc. borac. A dry, dirty mouth is a certain forerunner of broncho-pneumonia.

Fever does not as a rule call for any treatment in itself but when the temperature is 103°F to 104°F warm sponging may reduce it, calm the delirium and induce sleep. Antipyretic drugs are best avoided. A simple febrifuge such as Sp. Aeth. Nit. may however be given.

The bowels should be kept regular.

When broncho-pneumonia exists the patient must be helped to get rid of the respiratory exudate by means of stimulating expectorants—Ammon. Carb. gr. vii to x, Pot. Iod. gr. vj. to viij in the 24 hours. It is also well to

be prepared for the heart's giving out and for this purpose digitalis is useful. Immediately this complication is diagnosed five minims of the tincture is given three times daily. After the fourth day it is exerting its full physiological effect and it is diminished to five minims a day. Now on the slightest sign of cardiac failure full doses may be administered and will at once come into play. It is too late to start digitalis when the heart has once commenced to flag. Oxygen inhalations are indicated where there is cyanosis but have proved disappointing. It might be worth while to transfuse blood from a patient convalescent from this same condition. If the services of a surgeon having previous experience of this operation be available the whole blood may be used in quantities of 50 to 100 c. c. transferred to a vein of the patient by any of the recognised methods. Otherwise the serum alone will be best employed. 100 c. c. are drawn off into a sterile flask and allowed to stand over night on ice. The serum is then pipetted off with the most careful aseptic precautions and injected into a vein.

If pulmonary oedema be suspected energetic measures are called for. Diuretics and hot air baths to promote sweating will diminish the total fluids in the body and so relieve perhaps the lungs. Pilocarpine should not be used because of its depressive action on the heart. Atropine pushed to its physiological limit offers some little hope of benefit but its efficacy is extremely doubtful. The oxygen want which is always great in such cases, as the cyanosis indicates, calls for an increased supply of this gas. The mere blowing of oxygen in the patient's face is utterly useless, only by the use of Haldane's apparatus can the partial pressure of oxygen in the lungs be raised to that degree which is necessary to ensure its access to the blood. The pulmonary tissues are waterlogged and a barrier thus interposed between the inspired air and the blood through which diffusion is difficult and slow. It may be necessary to give practically pure oxygen: in any case its administration and concentration must be pushed until cyanosis is relieved. Venesection is rarely if ever indicated, the complete absence of any evidence of embarrassment of the circulation renders it unlikely that any benefit will accrue and none has been found in any case in which it has been carried out.

Other complications require appropriate treatment which does not differ from that applicable to them in other circumstances. For pleurisy the chest may be immobilised by strapping but a sharp look out must be kept for any effusion that may occur or an empyæma. In the former case if the fluid reach a large amount or persist undiminished for some time a needle should be inserted and the bulk of the fluid drawn off. When the effusion is small in amount it is best left alone and will undergo spontaneous absorption.

Incision and drainage with, if necessary, resection of a portion of a rib is the most satisfactory treatment of an empyæma though sometimes aspiration will suffice.

Nephritis can only be dealt with along general lines—the removal of as much work as possible from the kidneys by stoppage of all rich food, the ingestion of a bland, unstimulating diet consisting chiefly or entirely of milk and no renal stimulants, diuretics, etc.

One most important precaution in the treatment of every case of influenza is the obtaining of as complete immobilisation as possible of the patient. Such persons stand transport, *e.g.*, a train journey, extremely badly and no patient suffering from influenza, however mild it appear, should be subjected to any such risk. He must be absolutely confined to bed and allowed to exert himself in no way nor be exposed to any depressing or tiring conditions.

* DIABETIC CARBUNCLE.

Cure by injection of Acid Carbolic and Starvation without Operation

BY

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The following is an interesting case of treatment in a diabetic carbuncle and requires publication for general information.

I was called to treat a case of carbuncle last month. My patient was aged 64, was a strict vegetarian of an orthodox type and Brahmin by caste. He developed a carbuncle on his left posterior close to arms. When the case was seen by me it was as big as a small coconut without its husk. Had a red inflammatory hard swelling all round it and showed evident signs of rapid spreading in all directions. There were some pin head like openings on it without any discharge of pus. His temperature was 102° in the evening. Skin dry, S. G. of urine 1034, sugar plenty, but no albumen. Thirst and dryness of mouth very troublesome. Nights were sleepless. He was very nervous and timid and would not submit to any kind of operation. Even the very idea of it threw him to hysterics. Agreeing with me his sons also induced him to submit to operation but no sorts of philosophical preachings and advice would make him yield. I was in a fix and thought the case was a hopeless one but just to bring the patient to my side I decided to introduce the thin end of my wedge. With some difficulty I changed his diet. He consented to take soda water for the first time in his life. I put him on sodawater and milk. A calomel powder at bed time followed by two ounces of white mixture next morning was also prescribed and hot linseed poultice to the carbuncle.

2nd day. A mixture containing the following also was ordered :—

R/ Sodii Bicarb. Gr. 15

Tinct Nucis Vomice m 10 gr. each dose.

* Specially contributed to the *Antiseptic*.

Twice daily one dose at 2 p.m. and the other at 8 p.m.

Repeat soda and milk as food.

After much coaxing and persuasion I injected Acid Carbolic in two places on the carbuncle. One right in the centre and the other over the most dependent part.

3rd day. S. G. of urine 1030, sugar still plenty.

Another medical friend also saw the patient with me this day. He also tried to induce the patient for operation without any use. My medical friend got annoyed and I had to pacify him. We decided to do what was best under the circumstances without operation. And Carbolic was again introduced through the opening made the day previous. The acid seemed to pass through the damaged tissues. On the suggestion of my medical friend hot linseed poultice was replaced by hot Boracic poultice.

Diet. White mixture and alkaline mixture continued. Carbolic and coconut oil was given for urgent application to allay irritation.

4th day. To our surprise and joy the patient was found improving. The two openings were wider. Through this the infected tissues beneath the skin could be swabbed with carbolic. Slight discharge of thick pus began to appear. The temperature was normal, S. G. of urine 1024. A small increased mass of tissue was found in each opening and the carbuncle showed unmistakable signs of shrinking. Repeat treatments.

5th day. The patient was much better S. G. urine 1020. Sugar still present. The patient was very weak. His voice was almost inaudible owing to starvation. He begged for some solid food. Two small meals of milk and wheat were permitted for 2 days and mixture alba was suspended with instruction to repeat it after 2 days. Subsequent treatments were entrusted to my medical friend. The patient has now recovered.

This case shows that starvation and carbolic acid can cure some cases of diabetic carbuncle, and may be adopted in hopeless cases, where knife is much dreaded.

OUR CONTEMPORARIES.

MEDICINE.

The Prevention of Heat Stroke.

K. G. Hearne.—Notwithstanding the diverse theories that are put forth in textbooks, the writer's observations in Mesopotamia show that heatstroke is entirely due to suppression of sweating, which may be present from one

to 48 hours before the attack. The body temperature then tends to adjust itself, in accordance with physical laws, to the temperature of the atmosphere, which may be 115° to 120° at the time, and even to rise higher, for, as Sutton and Graham and Poulton have pointed out, a rise in body temperature produces increased respiratory and nitrogenous changes, resulting in a further increase of internal body heat. The processes continue until, when a temperature of 108° or more is reached, sudden unconsciousness, delirium, and convulsions appear—due to the action of heated blood on the specialized brain cells. The writer repeatedly observed the pre-existence of suppression—in one case for as long as 18 hours before the attack—while in numerous other instances there were histories of it. The cessation of perspiration is probably due to exhaustion of the sweating mechanism during several previous days of intensely severe weather, and there is reason to believe that the defect is localized in the sweat glands. Large doses of diaphoretics are powerless to produce sweating when once suppression has set in.

By the early recognition of suppressed sweating the prevention of heatstroke is simple. The writer inspected his hospital patients in Mesopotamia periodically—every hour on extremely hot days—to detect those who required preventive treatment. Any who had a temperature of 103°, with complete suppression, were stripped and covered with a wet sheet. This measure simply amounts to an artificial means of producing the same physical effects as sweating. When the temperature had already risen dangerously high before discovery a portable electric fan directing a current of air over the surface of the wet sheet was placed beside the bed. This greatly assisted the evaporative process.

In mild cases, or when the treatment requires to be maintained for several days until the natural sweating power returns, a convenient modification of the method, and one more comfortable for the patient, is to raise the wet sheet on a couple of bed cradles, thus forming a kind of cool chamber in which the naked patient lies protected from the surrounding hot atmosphere of the hut. With this device the additional aid of a fan playing a current of air over the outside surface is usually necessary in order to produce an efficiently cool atmosphere below the cradles on very hot days. Needless to say, the sheet requires to be kept wet, and much time and labour is saved by using for this purpose some form of spray such as the Holder-Harrison pneumatic disinfecting spray, filled with cold water.

If it were possible to remove the patient to a ward which was artificially cooled to a suitable temperature the individual cooling devices would, of course, be unnecessary. The success of these preventive measures can be judged from the fact that in the writer's hut (60 beds constantly occupied)

at the hospital, 9 cases of heatstroke with 4 deaths occurred within the first few days of the 1917 heat wave, but, directly the preventive system was commenced, the outbreak stopped. Only 2 more cases occurred during the remainder of the heatstroke weather, which lasted for 2 months. Neither of these had been under preventive treatment. The cases in this district (Basra) during the whole period averaged 9 a day.

Thus hyperpyrexial heatstroke is an absolutely preventable disease, the leading signs of onset being a hot, dry skin, which is typically harsh to touch, and a raised bodily temperature. There is usually also frequency of micturition. These signs are present from one to 48 hours before the attack. The patient, having lost his natural means of heat dissipation, requires his bodily temperature to be artificially regulated until he again begins to sweat, or until the heat wave abates.

The writer has had no experience of prevention in extremely humid climates such as Calcutta, where the atmospheric moisture may, possibly, hamper the evaporative process, but no doubt such a difficulty could be easily met by employing some other method of cooling the patient.

Even among troops on the march the principle of prevention is applicable. Water, and something that will act as a fan, are practically always obtainable, thus permitting an efficient form of first aid being applied to any man who exhibits the warning signs.

Among sleeping communities—for example, patients in hospital, or soldiers sleeping in barracks on very hot afternoons during heatstroke weather—periodic inspections are necessary in order to detect developing cases. These can easily be carried out by an intelligent orderly. The patient's general condition can be estimated roughly by touching the skin, and only occasionally is it necessary to use the thermometer, while those who are freely sweating can be disregarded.

In the after-treatment following an attack of heatstroke the tendency to relapses of hyperpyrexia are treated on exactly the same lines. The patient frequently does not regain his powers of sweating for days after the attack.—*Medical Review.*

Adrenalin Inhalation in Influenza.

A. Wolf-Eisner—The mortality from influenza would be enormously reduced were the resulting pneumonia aborted or prevented from extending beyond the primary foci of inflammation. The writer states that this can be achieved by inhalation of adrenalin, which constricts the small blood vessels, the capillaries in particular. The dilatation of the blood vessels of

the respiratory tract, which is so widespread in influenza, is thus checked, and congestion of the lungs aborted. Scattered broncho-pneumonic foci, do not fuse into a lobar pneumonia if the inhalations are frequently repeated.

The drug should not be injected subcutaneously, as its action is too transient when thus given. The inhalations should be prescribed 4 to 6 times a day, in conjunction with oxygen inhalation. A Drager's inhalation apparatus, connected with an oxygen cylinder, is used by the writer, who prefers "glycerinan" to the other suprarenal extracts. He has repeatedly found this treatment prevent the onset of pneumonia, even in the most severe cases of influenza, and check the further development of early foci of inflammation of the lungs. Apart from influenza this procedure is indicated as a preventive of broncho-pneumonia after inhalation anæsthesia, and whenever inflammation of the lungs and bronchi is anticipated. Particularly in children and elderly people is the abortive influence of adrenalin on pneumonia important.—*Medical Review.*

Soamin in the Treatment of Bronchial Asthma.

B. N. Ghosh recommends soamin given hypodermically. The initial dose is one grain, and this is increased by one grain with each injection, till a dose of 3 grains is reached. If the patient does not show any sign of improvement, however small, after the sixth injection, the chances are that there will be no improvement at all. To ensure success the following points have to be carefully followed: (1) Proper selection of cases (only cases of true bronchial asthma should be selected for this treatment); (2) injection should be preceded by an examination of the blood for eosinophilia as most cases of true asthma show an increase of these cells; (3) patients suffering from chronic kidney lesions should be rejected.—*The Prescriber.*

Acute Hæmorrhagic Nephritis after Caterpillar Urticaria.

F. Schmitz.—A medical man, who had never been seriously ill before, was stationed in Rumania where a certain hairy caterpillar is prevalent. It often causes urticaria by creeping over the skin. This happened to the patient. Dense wheals appeared over the whole of his body, with the exception of his face, hands and feet, and were excessively irritating. For three days there was no diminution of the urticaria, which was somewhat later accompanied by pain in the left brachial plexus, extending as far as the elbow, and greatly limiting the movements of the arm. On the fourth day

the urticaria began to disappear, and by the fifth day the itching had ceased and the wheals had disappeared. But on this day he began to suffer from progressive malaise, and his temperature rose to 102.9°. His pulse became rapid and he suffered from severe headache and vomiting. In the evening he was dazed. A few hours later, after cold compresses had been applied and he had sweated profusely, full consciousness returned. Next morning the color of the urine was dark and analysis showed all the features of acute hæmorrhagic nephritis. It ran a favorable course, and after four weeks there was not a trace of albumin in the urine. Four weeks later its sediment contained no pathological elements.—*Medical Review.*

Blue Skin Dots from Hypodermic Injections.

Herbert French, F.R.C.P.—Curious blue dots may occur, generally on the arms or legs, as the result of hypodermic injections of morphia or other drugs.

BLUISH SKIN SPOTS FROM LOUSE BITES.

Another blue mark—not so definite as those mentioned—is caused by the bites of body lice. Everybody does not show the same amount of subcutaneous blue staining from these; many show none at all; but occasionally one meets with a marked case, and until one is familiar with the dull blue subcutaneous marks on the trunk and limbs, one may miss the diagnosis altogether. Each bluish mark is from $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter; circular; multiple; lasting a day or two only and then disappearing. With a lens a central bite mark may often be made out. If no lice can be seen in the pubic region, on the body, or on the clothes, ask the patient to hold the arms up and have a good look into both axillæ; the lice may often be detected there when they are not obvious elsewhere; and remember to look at both axillæ, for sometimes they may escape notice in one armpit and yet be obvious in the other.—*Medical Review.*

The Dangers of Dilatation of Stricture.

R. L. Spittel, F.R.C.S.—The improper use of bougies may be attended with consequences varying from slight rise of temperature to disturbances culminating in death. Even the careful use of instruments in cases of neglected stricture with infection of the urinary tract and inadequacy of kidney function is apt to be attended with grave danger. A thorough examination of the urine, and, in septic cases, an estimation of kidney function by methylene blue and phloridzin tests and the determination of the urea content are,

therefore, necessary prior to dilatation. Sometimes the very means adopted—cystoscopy and urethral catheterisation—to ascertain functional incapacity, may set up dangerous reactions. Only by a knowledge of the condition of the urine in every case can we be on our guard in a serious one, adopting only the gentlest of measures to begin with, progressing carefully step by step.

Indiscriminate and careless dilatation of stricture is a great menace to life. A man with stricture may be said to live on the brink of a precipice. An attack of retention may take him to a careless medical man. The formation of a false passage or the introduction of infection may precipitate a fatal phlegmonous cellulitis ("extravasation of urine") behind or in front of the triangular ligament, or set up a pyelonephritis that will slowly and surely end in death unless dealt with adequately. Such cases are commoner than even experienced surgeons would like to admit.

In tropical hospitals, the ignorant native seeks treatment only when the stricture is far advanced. One of several conditions may be present: (1) The stricture is always exceedingly tight and all but impermeable; sometimes the entire penile urethra is a solid block of fibrous tissue that resists the passage of the smallest instrument. (2) In addition the perineum, penis, scrotum, and even buttocks may be riddled with infected sinuses backed by fibrous tissue so dense that the fistula-ridden area is puckered and distorted, and what remains of the urethra twisted and kinked. When the patient micturates the resemblance is to a watering-can and the pain is severe. (3) Frequently nothing short of extravasation of urine that has occurred spontaneously or been precipitated by crude efforts at dilatation, brings the patient to hospital.

A man, aged 50, was admitted with a tight penile stricture. He had a discharge from the urethra, as well as scrotal fistulæ surrounded by dense fibrous tissue. The stricture was forcibly dilated at 9 a.m.; there was some hæmorrhage. The urethra was not irrigated either before or after dilatation; the bougie was left in for a couple of hours. No evidence of constitutional disturbance appeared until the patient made an attempt to urinate; 5 or 10 minutes after this he felt chilly, developed a rigor, and his temperature rose to 103°. The temperature remained high until midnight, when he suddenly collapsed and died—15 hours after dilatation. The necropsy revealed no gross changes. Death was probably due to septicæmia.

This case illustrates the danger of dilatation of stricture in the presence of urethral infection. The explanation is that the forcible passage of a sound rubs the infection resident in the urethra into torn tissues inoculating the patient with a large dose of highly virulent organisms. The case also illustrates a point often observed after dilatation, viz., that constitutional symptoms set in almost immediately after the first attempt at micturition subsequent to dilatation.

Death from "surgical Kidney" after dilatation.—A Cingalese, aged 55, had a stricture and blood-stained urethral discharge containing staphylococci and streptococci. For 10 months he could pass urine only in drops and that incessantly day and night.

On May 12, 1915, dilatation was performed; there was some bleeding. Next morning the temperature was 100°; he complained of great pain in the hypogastrium; the difficulty in micturition was not relieved (indicating probably a false passage and non-dilatation of the stricture). On the following days the hypogastric tenderness gradually increased; a creamy urethral discharge was present; micturition remained difficult and scanty. The urine was acid; it contained slight traces of albumen and pus cells in abundance, streptococci and colon bacilli. Vomiting supervened, and he complained of a feeling of faintness and ringing noises in the ears. The left loin was tender to fist percussion. Urinary antiseptics were given by mouth and the bladder was washed out daily with boric and silver nitrate solutions. On May 26 a toxic rash, not unlike that of measles, appeared all over the body. He gradually became apathetic, and refused food. Urine and faeces were passed in the bed. By June 5, he had become delirious, screaming out at frequent intervals. On the 6th he was seized with a tremor and died. The necropsy showed abscess in the lower pole of the left kidney and pus in the pelvis and calyces of the right.

Death was due to ascending pyelonephritis and occurred 24 days after dilatation of the stricture. A timely nephrotomy with drainage might have saved the patient.

Peri-nephritic abscess following catheterisation of healthy urethra.—A Cingalese, aged 47, was admitted with pain in the right loin radiating towards the hypogastrium. Five months previously he had been operated on for hæmorrhoids, and catheterised 3 times owing to reflex retention of urine. Two months after this he felt a burning sensation in the urethra with frequency of micturition and the passage of only small quantities of urine at a time. Four days later he had pain in the left loin, where, in the next few days, a swelling developed, rendering sleep on that side impossible. Two weeks after the onset of the lumbar pain, an abscess was opened through a lower intercostal space, in which position a sinus still persisted. The urine was acid and contained pus cells and colon bacilli in abundance; there were also a few red bloodcells. Rest, purgation, urinary antiseptics, fomentations, and cupping staved off suppuration.

This case shows the necessity for the strictest asepsis in catheterisation. Coli infection of the urinary passages can be so persistent that a patient may be rendered a chronic invalid. He may acquire the infection merely as a side issue to some such operation as a herniotomy or removal of hæmorrhoids in which reflex spasm just after operation necessitated catheterisation.

Dilatation of stricture; false passage; rupture of urethra behind the urogenital diaphragm.—A Singalese, aged 28, complained of frequency of micturition and a burning sensation in the urethra during the act. He had both syphilis and gonorrhoea about 5 years previously; and had a stricture dilated in hospital on 3 occasions.

On Jan. 20, 1917, the stricture was dilated without previous irrigation. That evening the temperature was 100°, and he complained of pain and tenderness in the hypogastrium. By the 22nd the hypogastric tenderness had increased; there was no swelling or pain in the perineum; urine was passed with great difficulty and only in drops; his nights were sleepless. Paravesical extravasation behind the urogenital diaphragm (triangular ligament) was suspected. A supra-pubic incision was made, and a drainage tube retained in the fossa of Retzius; a silver catheter was tied into the urethra; this was removed on the 24th. On the 25th morning the temperature was 100.4°; the abdomen was distended and the bowels loose; offensive urine was being passed freely. The abdominal wall, just above Poupart's ligament, was the seat of a boggy reddish swelling. The loins were somewhat tender, especially the right. The patient's aspect was apathetic, and he would take little or no food. On the 31st the bladder was thoroughly irrigated, and a large quantity of very foul pus and urine was evacuated; a rubber catheter was tied in. After this, the bladder was regularly washed out with hydrogen peroxide and silver nitrate solutions. The patient, however, rapidly lost ground, the urine remaining blood-stained and extremely foetid and he died on Feb. 2nd.

The necropsy showed the bladder black, gangrenous, and adherent. Both kidneys were congested and enlarged, pus was present in the right.

This case illustrates the signs and symptoms of urine behind the urogenital diaphragm—a complication that sometimes occurs after dilatation of stricture, and is apt to be overlooked. The stricture is split beyond the limits of the urethra down to the cellular planes of the pelvic fascia behind the urogenital diaphragm (superficial and deep layers of the triangular ligament) or the infection travels from a less considerable tear, seeking out fascial planes by continuity of tissue or by the lymphatics. Such extravasation is not followed, as in the classical extravasation in front of the urogenital diaphragm, by swelling in the perineum, scrotum, and penis—a route determined by the attachments of Colles' fascia. Pain and tenderness in the hypogastrium is the first danger signal of extravasation behind the urogenital diaphragm, and later, infiltration and swelling in the lower abdominal wall just above Poupart's ligament. The treatment in this case was hesitant and inadequate. It consisted of supra-pubic incisions, catheterisation, and irrigation of the bladder—measures which did no

provide for adequate drainage of the infected pelvic cellular tissues. In the following case timely intervention saved life.

Stricture; dilatation; signs of extravasation; perineal cystotomy; recovery.—A well-nourished Singalese, aged 40, was admitted with stricture of 10 years' duration. He suffered from time to time with attacks of frequency of micturition and retention of urine. Pus cells, streptococci, and staphylococci were present in the urine.

On Nov. 15, 1917, a tight bulbous stricture was dilated to $\frac{1}{2}$ inch. There was much bleeding. The urethra was irrigated both before and after dilatation. That evening the temperature was 99.6°. Urine did not pass freely.

Nov. 16.—Morning temperature, 103.2°; pulse, 136. He had a chill and rigor the previous night, after which the temperature rose. He complained of a sense of oppression in the chest, and of pain in the hypogastrium radiating to the root of the penis, also of pain in the loins, which travelled down towards the sacrum. He had thirst and headache. There was a burning sensation in the urethra during micturition; the urine was clear. Evening temperature, 102.4°. He refused food and looked very ill.

Nov. 17.—Morning temperature 101°. As his condition was not improving, perineal cystotomy was performed, and a tube retained in the bladder, which was washed out with silver nitrate solution; foul urine was removed. Evening temperature, 100°. The bladder was irrigated daily; and the symptoms rapidly cleared.

This case illustrates the great value of perineal cystotomy when the first signs that all is not right at the site of dilatation occurs.

The lessons of these cases are as follow:

The greatest gentleness should be exercised in the dilatation of strictures—especially when the urinary passages are the seat of infection as revealed by urethral discharge, pus, and organisms in the urine, etc.

Dilatation should be gradual. Rapid dilatation, involving as it does much tearing of tissues and inoculation of the patient with infection present in the urethra, cannot be too strongly condemned.

The presence of the sound in the bladder in difficult cases should always be verified by introducing a gloved finger into the rectum. If the sound has been carelessly passed, surprising revelations may thus result, such as the point of the instrument in the rectum. There is no better expedient in the dilatation of tight strictures than the guiding of the sound by the index finger in the rectum and the thumb on the perineum; false passages are thus averted.

The urethra should be thoroughly irrigated both before and after dilatation. In this way severe febrile reactions ("catheter fever") are avoided, as also other complications such as epididymitis, metastatic joint infections, spreading cellulitis ("extravasation of urine"), and the ascending pyelonephritis ("surgical kidney"). The best irrigating solutions are boric, potassium permanganate and silver nitrate (gr. 1 to 2 to a pint). After dilatation of infected urethra the patient's condition should be very carefully watched, his temperature taken, etc.

If, in spite of these precautions, dilatation be followed by symptoms of pain in the perineum or hypogastrium, the frequent passage of only small quantities of blood-stained urine, and severe constitutional disturbance—such as a feeble, quick pulse, cold extremities, and later loss of appetite, apathy, and inanition—then extravasation is imminent and no time should be lost in performing perineal urethrotomy with the retention of a tube in the bladder which should be irrigated twice daily. Intervention must be prompt if the patient is to be saved—certainly within 3 or 4 days, preferably within 48 hours.

Some hold that the symptoms of extravasation of urine are not due to an extravasation *per se*, but to a rapidly-spreading cellulitis which spreads to the peri-urethral tissues either by phlebitis and thrombosis in the corpus spongiosum or along the ducts of the glands of Littre, Cowper's gland, and the prostate. Be this as it may, a diffuse phlegmonous process manifests itself as a brawny induration in one of two ways:

(a) *In front of the urogenital diaphragm* (triangular ligament) where it follows the classic course over the perineum, scrotum, and penis, determined by the attachments of Colles' fascia.

(b) *Behind the urogenital diaphragm* in the superior perineal compartment. In this event the clinical manifestations are much less apparent. The lesion being deeply seated, visible signs do not develop until the process is well advanced and the condition of the patient grave. The cellular tissue of the pelvis is invaded and the first signs are tenderness in the hypogastrium and a red oedematous swelling round the rectum and in the ischio-rectal fossa. Later, a brawny oedema occurs in the lower abdominal wall as well, and a diffuse gangrenous cellulitis occupies the pelvis involving the bladder and tracking up the ureters; but when this stage is reached the patient is beyond help.—*Medical Review.*

SURGERY.

Some Don't's for Burns.

There are some things that should not be done to a burn, and some of them are these: Never use an antiseptic of any kind on a burn except of the mildest sort, because its caustic action will eat off the new cells and cause a maximum of scar tissue formation; never use salves or grease of any kind, as they will surely cause sloughing and infection; never allow the cotton or gauze in your dressing to come into contact with the wound, as it will act as a mechanical irritant and the new cells growing into the meshes will be pulled off when the dressing is removed; never apply a powder or dry dressing, as the serum will dry, forming a crust under which it will rapidly stagnate and decompose.—*American Journal of Surgery.*

The importance of blood Examinations in the Surgery of the Nose and Throat.

BY

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The more than occasional reference in the literature to cases of severe or even fatal hemorrhage following operations upon the nose and throat and particularly operations for the removal of the lymphoid tissue of the nasopharynx and faucial tonsils attracts attention. The undoubted existence of a goodly number of fatalities which are unpublished and hidden away in the memories of the operator, leads to much thought as to why these procedures should be fraught with so many more complications of this nature than in other general surgical interventions. Is it due to a lack of pre-operative understanding of the individual, or to unusual abnormalities found with greater frequency in these regions?

Harmon Smith reported, in an article many years ago, a series of over fifty cases compiled from the literature of alarming hemorrhage after tonsillotomy. We must, however, take exception to his statement as to the careful attention drawn to this subject in the text books. We have been unable to find anything more than the crudest casual reference in the works we have consulted.

May we be so bold as to say that it is a lamentable fact that of all those in the medical profession who would dare to do any kind of a surgical

operation, probably more have had the temerity to attempt operations upon the nose and throat with less knowledge of their anatomy, than upon any other part of the human body.

Why have so many men who likely would shrink from attempting even the most minor surgery, been emboldened to operate upon the tonsils? Surely, there must be a good reason and our object in calling attention to this state of affairs is not to deter any one from attempting surgical work he is capable of doing, but to emphasize the importance of preparation for the performance of operations that have long been regarded too lightly.

We find constant explanations in the published cases of abnormal position of blood vessels and other lame excuses, for upon a critical analysis of the case, in most instances, the resultant complication has been due to a lack of sufficient preliminary investigation of the patient to be operated or in some cases a very decided error in technic.

The haphazard calling of a patient a bleeder, as an explanation without warrantable fact, is as poor a diagnostic excuse as hysteria; they both cover a multitude of sins and have eased the conscience of a multitude of occasional surgeons and shielded the incapable or futile efforts of the more experienced.

There is an old adage, "He who lives in a glass house, must pull down the blinds" and we must plead guilty in earlier experiences to the very defects which we are pleading to correct. We have but to cite the following instances in the experience of one of us.

An opera singer had a lymphoid mass at the base of the tongue, which interfered with her high note vocalization. Her history was that five years previous, a very celebrated laryngologist had removed her tonsils, and for a period of nearly a week following, there was a constant succession of secondary hemorrhages, which finally ceased after a ligation of the carotid artery. This history was accepted with due consideration, but there had been nothing in my observation (non-surgical) of this patient which led me to any conclusion but that the bleeding had been due to anything other than poor surgical technic. I accordingly guillotined a mass from the base of her tongue. Four hours later a secondary hemorrhage took place and I spent the remaining thirty hours in attendance upon her. Can you imagine a more difficult place to control a hemorrhage in a nature of a steady ooze? Had I the knowledge of the value of blood examinations at that time, I would have determined in advance of the operation that which I subsequently ascertained, that this patient was a true hemophiliac.

It is not the purpose of this paper to take up the question of the type of operative procedure, but we must make reference to the universal diversity

of the plan of attack. Each operator seems to have a particular pet method. For example: in recently observing six different men in the course of one afternoon operate at one of our prominent clinics, each operated by a different method, and while we grant that every road may lead to Rome, yet some have pitfalls and are headed straight for the cemetery.

Upon close inquiry, we found that of the large number of these cases, twenty-six, which we saw operated upon at that particular clinic, had either entered the hospital the previous night, or on the day of the operation and only a local examination of these children's noses and throats had been made. We are satisfied that some of these cases had had a very recent acute infection of the upper respiratory tract and probably were still running temperature or having considerable bronchial cough or a nasal secretion suggestive of an ethmoidal infection.

In one, the character of the nasal discharge with the excoriated condition of the muco-cutaneous juncture of the nose would to my mind have suggested a possible nasal diphtheria. In not a single instance was a blood examination made to determine whether or no a hemophilic or purpuric tendency was present. Three of these manifested a sufficiently troublesome amount of bleeding to have suggested very strongly that such a dyscrasia was underlying, although in one case one could not help but reflect that the use of the bistoury was rather an antiquated method of operation and one attendant with the possibilities of inviting disaster.

The invariable practice of controlling the bleeding was by compression. Only one operator of this group resorted to the use of the hæmostatic forceps. Many of these cases left the operating table oozing and in all probability subsequently vomited up large quantities of swallowed blood. Observations of this kind raise the thought as to why should throat surgeons perform procedures differently than the general surgeons. Would the abdominal surgeon rely upon compression and close the wound without securely ligating every bleeding surface? If not, why should throat surgery be performed along such indifferent and careless lines?

It is not, however, the object of these remarks to dwell upon this phase of the subject, but rather to take up some consideration of the subject of the blood under normal and hemorrhagic conditions and to make reference to the great importance and preoperative value of blood examinations preliminary to operative work upon these parts, for to be forewarned is to be forearmed, and the safeguarding of the patient is the safeguarding of our own reputation.

Under normal conditions, when blood escapes from the blood vessels either into the tissues or outside of the body, coagulation takes place in from three to ten minutes. If the blood were to be removed from one of the

blood vessels without first coming into contact with the tissues it would require a longer time to become jellied throughout. The same blood that coagulates in between three and ten minutes, when removed directly from the blood vessels may require thirty to forty minutes for coagulation. Almost all of the methods suggested for the determination of coagulation time fail to recognize what physiologists demonstrated long ago, that contact with the tissues markedly accelerates the coagulation time of the blood.

After the coagulated blood has stood for a short time the fibrin in the clot contracts, holding in it the enmeshed blood cells, and a straw-colored fluid is expressed which is known as serum.

Numerous theories have been advanced concerning the reason for the coagulation of blood and the one of Howell is probably most generally accepted, because each step is supported by experimental evidence. We may briefly summarize as follows: The final product, fibrin, does not exist as such in the blood, but is formed from its precursor, fibrinogen, by the action of thrombin upon it. Thrombin is a protein substance. It does not exist in the circulating blood, but is formed by the inter-reaction of prothrombin and calcium salts. The activation of prothrombin does not occur normally while the blood is still in the blood vessels; it occurs only after the bleeding has taken place for the reason that in the blood there is a substance which prevents the formation of thrombin and has been called anti-thrombin. The blood platelets and blood cells, when they undergo disintegration, and the lacerated tissues produce a substance which neutralizes anti-thrombin and allows thrombin to be formed by the combination of calcium salts and prothrombin. "Thromboplastic substances" is the term given to those materials which nullify the action of anti-thrombin. Howell has isolated a phosphatid which he calls "kephalin," which substance has the power to counteract the action of anti-thrombin.

Many methods have been devised for the estimation of coagulation time. Some have involved the removing of blood from a vein; others with the obtaining of blood by puncturing the skin. The removal of blood directly from the vein necessarily must exclude the action of thromboplastic substances derived from lacerated tissues and the blood will not coagulate as quickly as the blood removed by puncturing the skin.

Of course, this method does not give us a fair index of the coagulability of the blood comparable with that which obtains after an operation. After a surgical procedure, the blood exudes over cut or lacerated tissues and gains the action of the thromboplastic substances from the cut or lacerated tissues in addition to the substances produced by the disintegration of the blood platelets and blood cells. We have adopted a method which is most serviceable in relation to nose and throat surgery. The skin is punctured

with a needle having a knife edge and the blood is sucked into a 0.2c.c. pipette, such as is used in serological work. The blood is then allowed to flow about the centre of the pipette and it is then placed in the thermostat at 37° C., and observed every two minutes. From time to time a small drop of blood is blown on to a glass slide to determine whether coagulation has started. When coagulation is complete, it is very difficult to blow the blood from the pipette. Very often the blood, after having coagulated, does not contract and does not attach itself to the sides of the pipette and flows readily upon holding the pipette in an upright position. For this reason, it is always necessary to blow a drop on to a glass slide to determine the presence of a clot. By allowing the blood to flow to about the centre of the pipette, we avoid as much as possible any action on the blood which may occur as the result of drying while in the thermostat. With this method the coagulation time was estimated in over 400 cases, the average time being 6.3 minutes; the most prolonged coagulation time was 29 minutes, and the shortest was 1½ minutes.

In connection with this work, it is always necessary to determine the bleeding time for the reasons that will be mentioned later. The bleeding time is determined by noting the time when the skin is pierced and observing how long it will bleed by gently squeezing the part from time to time. The bleeding time was determined in nearly 200 of the cases above cited; the average time was 5 minutes, the longest bleeding time 29 minutes and the shortest 2 minutes. The coagulation may be prolonged and the bleeding time may be short or *vice versa*, or both may be prolonged.

Two conditions, namely, hemophilia and purpura, demand especial attention in connection with this work, for if they are not recognized before an operation is performed, they may give rise to complicating conditions which may even jeopardize the patient's life.

In no case where either the bleeding time or coagulation time varied much beyond the limits of normality, was operation undertaken without preliminary preparation to improve the altered blood condition. If this was not successfully accomplished, as occurred in a few instances, a refusal to operate was emphatically made.

Hemophilia is a hereditary disease transmitted through the female to the male offspring. It is characterized by greatly increased coagulation time, and as the result of an individual receiving a slight wound, it may prove the cause of his death. The true etiology of hemophilia is not yet known. It was presumed, at one time, that the delayed coagulation time was due to an increased amount of anti-thrombin, but subsequent investigation has proven the falsity of this supposition. It was then thought that there was in the blood of these patients a smaller quantity of calcium salts than normally exists.

A series of several patients having a delayed coagulation time were prepared successfully for operation by the administration over a period of time of large doses of calcium lactate. In some of these cases the hereditary influence could be demonstrated. From time to time, cases of hemophilia calcipriva are found, but the great majority of them have apparently a normal amount of calcium salts. Thus far we have been unable to unravel the mystery.

Purpura is a condition in which the bleeding time is prolonged, and the coagulation time is normal, although the clot does not contract. There is a diminution in the number of blood platelets, and the erythrocytes are easily laked by hypotonic salt solutions. Hess has recently shown that this diminution in blood platelets is only apparent, but not real. There is a diminution in the visible blood platelets and the remaining number are in solution in the plasma. This observer believes that purpura hemorrhagica is caused by some toxin which dissolves blood platelets and injures the blood vessel walls. The poison in some hemolytic diseases is thought to be associated with a disease of the spleen, as the number of blood platelets increases after the spleen has been removed, and it is suggested that splenectomy should be taken into consideration in the course of the treatment of such a disease.

Lee and Robertson have been unable to produce experimental purpura in guinea pigs by injecting the serum of a rabbit that had been given immunizing doses of guinea pigs' blood platelets. They found the identical conditions the same as observed in a patient suffering from purpura. We are at present repeating this experiment with the view of producing an anti-platelet serum and if possible applying it to human beings.

The purpuras constitute a great variety of cases differing only in details. Purpura is not a hereditary disease, although in exceptional instances several cases have been found in one family. In one of our cases now under observation, a child with a normal coagulation time and an intensely prolonged bleeding time, the blood platelets were markedly reduced, and it was found upon further investigation that a similar condition of delayed bleeding time and blood platelet reduction existed in the mother as well as the father.

In this case there is a probability of the cause being an impairment of the nutrition of the blood vessel as the result of the influence of heredity from a syphilitic parent. Calcium administration in this case was of no avail nor is this remedy expected to be of value in purpuric cases. Unless improvement follows the administration of human serum, this patient will not be subjected to operation.

A number of cases have been reported in which the coagulation time and the bleeding time are prolonged and there is a diminution of blood platelets. These cases are very rare, and seem to be a combination of the two diseases.

In anaphylactic conditions the coagulation time is prolonged and very often the bleeding time also prolonged. We have been confronted with this problem in several cases suffering from anaphylaxis due to asthma or pollinosis where there existed in addition a disease which required operative interference.

R. W., a young woman with a markedly delayed coagulation time, suffered from asthma due to horse dander. This was successfully treated by immunization methods. In addition there was a complicating ethmoiditis. An unusual degree of secondary oozing for five days took place after the local nasal operation.

It has also been observed that the children of individuals who have an anaphylaxis, who themselves show no symptoms of a disease such as asthma or pollinosis, manifest, however, a decided alteration in the blood coagulability, the same as the parent.

Hemorrhage may be divided, from the therapeutic standpoint, into two classes: continuous, slow oozing of blood and active bleeding from a severed or lacerated blood vessel. It should not be a great problem to effectually check the latter variety even though its site may be difficult of access. The treatment of the former condition depends upon a great many factors. In the bleeding due to hemophilia, the purpuras, leukemia, anaphylaxis or any other condition in which the coagulation of the blood is prolonged, or is there a disturbance in the nutrition of the lining of the blood vessels, or is there some subtle toxin which produces a destruction of the blood platelets, or destroys the red blood cells, or is there a combination of one or more of these factors?

Therapy.—Human blood serum, or in the absence of that, diphtheria anti-toxin may be administered either subcutaneously or intravenously. We have given transfusions of whole blood with exceptionally good results in several cases. Of course, in the cases of hemophilia or purpura, the effect of these treatments is only temporary, inasmuch as it checks only the momentary tendency to bleed or the hemorrhage after operation; it does not cure the primary condition. Many substances have been used which have been found effectual in checking the slow, continuous oozing which has occurred, whether spontaneously or following operation.

Among these we may mention Coagulen, which consists of blood platelets of the horse; Thrombokinase, made from the pig's lung, and Thromboplastin, which is macerated brain tissue suspended in saline solution. This last preparation was originated by Hess, and has for its object the counteraction of the anti-thrombin in the blood; it is efficacious in stopping capillary oozing of moderate severity.

Lowenberg and Rubenstone have recently conducted an experimental research on the effect of glycerinated extracts of visceral tissues on the coagulation time of the blood.

They found that the normal tissue extracts uniformly accelerate the coagulation time of the calcium plasma, and that most of the hemophilic tissues, with the exception of thyroid and liver, seem to exert almost the same influence on coagulation. Thyroid gland and liver not only caused a prolonged coagulation time, amounting to two and one-half times the corresponding normal tissues, but actually inhibited the action of the calcium added to the plasma, so that the coagulation of the calcium plasma was prolonged almost two minutes.

These observations were repeated with uniform results, and though admittedly limited to the tissues of one hemophiliac, yet they are strikingly significant, in that there is possible that the thyroid and the liver may secrete an anti-thrombic substance or enzyme which may be in part, if not principally, the cause of the deranged coagulative mechanism of hemophilic blood.

There are various other biological products which are more or less efficacious, but they are too numerous to mention and bear very little relation to the ultimate object of this paper. Calcium salts have been found to be occasionally successful in reducing the coagulation time in those cases in which it is prolonged. When the coagulation time is normal, calcium salts have no effect. This was demonstrated in a series of fifty children having normal coagulation time, who were fed with calcium lactate with no influence.

One of the most difficult condition to combat is when the bleeding time is prolonged. We have no means at present of absolutely counteracting the substances in the blood which destroys the blood platelets, lessens the resistance of the blood cells or causes a disturbance in the nutrition of the lining of the blood vessel. Occasionally, however, the bleeding time may be shortened by the administration of large doses of human serum as the following cases among a series demonstrates.

A brother and sister were advised to have their tonsils and adenoids removed. In the girl the bleeding and coagulation time was over fifteen minutes, and in the case of the boy, the bleeding time was eight minutes and the coagulation time fifteen minutes.

Unfortunately at the time, owing to war conditions, we were unable to procure brilliant cresyl blue, which is used in counting blood platelets, and this phase of the case was necessarily neglected. The proposition which presented itself was, therefore, one in which the bleeding time and coagulation time were inordinately prolonged, and the other in which the bleeding time was within the range of normal but the coagulation time was

prolonged. Both children were given calcium lactate in large doses over a period of a number of days without appreciable effect. Ten c.c. of the serum obtained from the father's blood was injected intramuscularly into each of the children. One day later, the coagulation and bleeding times of the girl were found to be twelve minutes and sixteen minutes, respectively, and in the case of the boy, nine and ten minutes, respectively. It was decided to remove the tonsils and adenoids of the boy. He bled considerably during the operation, but not sufficiently to be disturbing. Five days after the first serum injection the girl was again given ten c.c. of her father's blood serum. The bleeding and coagulation time two days later was found to be seventeen and nine minutes, respectively. Because the bleeding time still remained prolonged it was decided to defer the operation. Four months later the girl was again tested and her bleeding time was found to be fifteen minutes and the coagulation time twelve and one-half minutes. Again ten c.c. of her father's blood was injected intramuscularly, and two days later the coagulation time was seven minutes and the bleeding time six. Tonsillectomy was then performed without any undue bleeding taking place.

In conclusion, let us say that these observations are recorded for the purpose of showing the importance of a little more care before performing operations without sufficient preliminary examinations, and of stimulating further investigation along similar lines hoping to localize the offending principle causing these idiopathic diseases—*A. J. of Surgery*.

OPHTHALMOLOGY.

The Treatment of Squint

By

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I do not intend, as the title of this paper shows, to touch on the vexed and complex question of the ætiology of squint, but on that of its treatment only; neither to dogmatize, but to tell you how I treat squint in my own practice.

In speaking of squint, unless otherwise qualified, I mean concomitant convergent strabismus.

Two cardinal principles stand out. (1) That treatment cannot be begun too early; (2) that observation, with concurrent treatment, should be continuous until the squint is cured. This will probably be months, and may be years.

The means of treatment open to us are:—

- (i) Instillation of cycloplegics.
- (ii) Covering the good eye.
- (iii) Amblyoscopic exercises.
- (iv) Glasses.
- (v) Operation.

Several or all of these measures may be used in turn, or together.

When a squinting child comes for treatment, the following points are noted and recorded:—

- (1) Whether constant, periodic or alternating.
- (2) Whether concomitant or paralytic.
- (3) Whether convergent or divergent (also any vertical factor).
- (4) True or false fixation.
- (5) Size in degrees, as measured by Priestley Smith's tape.
- (6) The approximate duration.
- (7) Vision, if possible.
- (8) Refraction, and fundus examination.

When one sees a squint within a few days or a few weeks of its onset, the value of atropine, to hamper the use of the non-squinting eye, is at its highest. This, with correction, if necessary, of the refraction, especially if high hypermetropia be found, will probably prevent its development as a permanent deformity.

If the patient is a young infant, nine months is the earliest age at which one can hope to estimate the refraction by retinoscopy. I have done this and prescribed glasses to several infants of this age, and the glasses were worn with comfort.

Earlier than this, if the squint is monocular and slight, atropine in the good eye I have found to prevent its further development. When, in young children, the squint is associated with nystagmus (often due to lental or retinal changes), nothing is of avail except operation, for cosmetic reasons, which is better in such cases postponed to a later date. Here, an early operation, will not save fixation power, since this has never existed, its absence being the chief factor in the production of the squint.

Let us consider a typical case of squint. A child of from three to ten years of age has a convergence of 30°, the squint has existed for several years, the eye is amblyopic, and fixation is absent or poor. There are, let us say, five dioptries of hypermetropia, spastic contraction of the internal recti and weak abversion.

My procedure is as follows: I correct the refractive error up to half a dioptré, in the case in point, 4.5 D., and atropinize the good eye once daily. If circumstances permit, I occlude it also with a pad and atroping for a month continuously. I can see no use whatever in doing so for a few hours daily, as is often advised. At the end of a month, if there is any improvement in vision or fixation power—and the case presupposes the other—I persist in this course, seeing the child at least once a month.

If these have improved very much, amblyoscopic exercises may do good at this stage. In this connexion I may say, without depreciating the method, which is based on rational principles, that it is useless in the majority of cases of the class I am now describing (those of long duration with amblyopia). In selected and recent ones I have found it beneficial, and know that others have done so. But in hospital practice, and in most private cases too, it must remain impracticable, owing to the time it demands.

Assuming for the moment that the case is not one of those likely to repay one in its results for the time spent on orthoptic training, I continue occlusion, with or without cyclopegics to the good eye, with at least monthly examinations, until vision has ceased to improve. Fixation power will then generally have become re-established at any rate. I consider six months of such treatment and observation to be enough. If the condition is not improving, or has become stationary after a certain measure of improvement, and the squint is still over 15° with glasses, I advise operation. The child cannot grow up with one eye occluded or under cyclopegics. The newly-acquired fixation power will soon be lost, since the better eye will instinctively take up the work again. Or, if the eye is not amblyopic, it will soon become so, if it does not get a chance to work with its fellow. It is far easier to adjust a muscle than to arouse an undeveloped faculty or recover a lost one.

If the squint becomes alternate, or if it started as such, I waste no further time in treatment, but operate at once. In the former case the conditions have become ideal for an attempt at re-establishing binocular vision, and in the latter no treatment but operation will be of the least avail, as it is due to a defect of co-ordination.

I repeat, and I do it adviseably, that I am in favour of early operation; and I await criticism with an even mind.

Priestley Smith, at the Utrecht Congress, in 1894, emphasized the very early age of onset, which he showed to be frequent before four years, and even more so at two or three. The harm which arises from delay in treatment is incalculable. The most outstanding feature is loss of fixation-power, and the two most certain causes of this he showed to be early onset and long duration.

The longer treatment is delayed, the more certain it is that operation must be resorted to. The earlier cases come under observation, the less often will it be needed. But when delay has taken place before proper treatment has been sought, when the conditions described above have arisen, and when it is certain that the squint will need operation for cure, I see no use in delaying. It matters not whether the patient be two or twenty-two. But it is far more important in the former case. The older patient can only require treatment for cosmetic reasons; for the little one we may be able to save binocular vision.

The greater part of my remarks about operation refers to the majority of the cases met with, *viz.*, cases in which delay in seeking advice has occurred or inadequate treatment has been given. But I cannot refrain from quoting from the paper mentioned above Priestley Smith's views about the younger patients:—

Take the case of the child brought when two years old, with a continuous squint and uncertain fixation-power in the squinting eye. Suppose that, by constant uses of glasses and pad we get, during the next three months, some diminution of the angle of the squint, and return of active fixation-power in the faulty eye and then, month after month, no further progress. What shall we do? Shall we postpone operation for three or four years and try to persuade the mother to apply the pad periodically or continuously during the whole of this time? We shall almost certainly fail in this, and, in any case, there will be no development of the sense of fusion. The chances are that, by the time the child is five years old, recovery of binocular vision will be impossible. In such a case I should prefer to operate even at two years old. The operation, of course, will not interfere with further educative treatment; on the contrary, it will expedite and aid it.

My own practice has been based on this view. Squints, except slight ones, those coming under treatment early, and those in which correction of the refraction corrects the squint, do not tend to spontaneous cure ("growing out of it"), but to an amblyopic eye. The prescription of glasses for squint is not the end of treatment, but the beginning. The patients should be seen by the surgeon at intervals extending over years, whether operation be undertaken or not. At first, intervals of one month, later intervals of three, six, or twelve will be sufficient, but the patient should never be lost sight of. Most of my old hospital patients come up at varying intervals for inspection. One can thus observe one's results after long periods. I had meant to get together some statistics, but the present circumstances have made this difficult. My observations, however, are based on some hundreds of cases, seen over a period of twenty years.

Having given my views on the principles of treatment, I propose to tell you how I operate. My primary object is to shorten the external rectus muscle. To complete tenotomy, with certain well-defined exceptions, I am uncompromisingly opposed. The exceptions, are divergent strabismus, for which I do a full and complete tenotomy of both external recti, and hyperopia, for which I divide the superior or inferior rectus, as the case may be.

By completely tenotomizing the internal rectus in convergent squint, we are introducing an unknown factor. We do not know how far the tendon will retract. Those who defend the measure will say that the two bad results formerly observed—of secondary divergence and sinking of the carbuncle—will be avoided by those who are careful to divide only the tendon and not the lateral expansions. My objections, however, are not chiefly based on these grounds (though I recognize the dangers, but on the fact that, be it large or small, the amount of the retraction is unknown. What I am at is an approximation to accuracy. And this got by lengthening the internus by three cuts. The method has been largely advocated by Bishop Harman. The tendon is exposed by turning down a triangular flap of conjunctiva and clearing it from its fascia. From five to eight millimetres of the tendon between two squint-hooks are then exposed; two scissor-cuts (four or five millimetres apart) are made half way through its width on the upper side, and one on the lower, half way between these two, and two-thirds of the way through. This, by the zig-zagging of the cut tendon, permits the eye to be rotated into the new position in which it will be fixed by the procedure on the externus. It also, equally with tenotomy, puts the internus out of action for a week or so. This is called tenoplasty.

Having stitched the conjunctiva in place again, the eye is rotated inwards by a stitch at the outer limbus and the operation on the externus is proceeded with. I have a technique for advancement which gives me good results, and which I do not expect now to alter, as it is the final outcome of many trials. This I use when operating on a tendon which has been operated on before, and often also in adults. My method of election, however, is by Bishop Harman's method of "reefing" or "tendon-tucking." Those who are interested can find all details in back numbers of the *Ophthalmoscope* and the *Transactions of the Ophthalmological Society*. I have used the method in over fifty cases, sometimes alternating it with an advancement by way of comparison. Final results have been equally good by both methods, but I prefer the "reefing," because one can more accurately forecast on the operation table what those results will be. Advancement is guesswork at the best. In reefing, one can set out to correct so many degrees of convergence, and in most cases can get just this result. Harman gives two degrees for each millimetre of shortening. I think one gets more when tenoplasty is associated with it, as I think it always should be. I prefer not to aim at

more than eight or ten millimetres of shortening on any one eye. If more is needed, I operate on the other one.

At this point I may say that I always tell parents that a second operation will probably be needed for the fine adjustment. It often is not, and the first operation is not then regarded as a failure. In squints of a year upwards I always prefer to divide the procedure between the two eyes.

Other points about reefing are that it is slightly quicker, it is more bloodless, there is less trauma, and there is no visible scar at a later date. Harman draws the tucked tendon forward to the limbus, in order to over-correct for a few days, and to flatten down the reef, not with any idea of permanently advancing it. I have given this up, as I think it is better to know at the time just what effect to expect, and I have not seen the advantage that he claims by this modification.

Whether the procedure on the externus is advancement or reefing, I believe the effect on the tendon to be the same. Since adhesions will form over the whole area from the cut stump to the point near the limbus, where the tendon is stitched, advancement is only one method of making the tendon shorter.

As regards the amount of correction, I aim at a slight under-correction. If one eye is amblyopic this is the more important. One must allow for consolidation and contraction of the scar, by whatever method this is obtained. Where strong convex glasses have to be worn. I leave a few degrees uncorrected, especially if the eye is amblyopic. If there is good vision in both eyes, one may aim at orthotropia, with the reservations above. It is pleasant to have a little up one's sleeve, and it is easy to make any fine adjustment by a slight operation on the other eye, if needed, after scar-contraction is complete and glasses and educative methods have been employed. Only those who have had it forced upon them know the worry and trouble entailed by having to re-operate on an over-corrected eye.

I prefer local anaesthesia whenever possible. Deep injections in the neighbourhood of the tendons are very effective. In private it is more often possible than in hospital practice, where one has not the time to coax and gain the confidence of the small patient. I have used local anaesthesia on quite unusually fractious children of four.

Although I have spoken strongly in favour of Harman's operation of "reefing," that is not the *raison d'être* of my paper. I regard the method of obtaining a shortening of the externus as of quite secondary importance. In any discussion that may follow, I hope that it may not centre round the best technique for obtaining a shortened externus, but that it may be focussed rather on the principles I first mentioned, *viz.*, prompt treatment, continuous



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Died in London, 17th July 1919.

THE ANTISEPTIC.

Vol. XVI.]

AUGUST 1919.

No. 8
Annual Sub-
scription Rs. 5

Original Articles.

• THE SEVERE ANÆMIAS OF PREGNANCY AND THE POST-PARTUM STATE

BY

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ASES of severe anæmias during pregnancy and after delivery are met very often in general practice, and need careful consideration regarding diagnosis and prognosis. The several forms of anæmias met with can be grouped under the following heads:—

1. The severe anæmia of pregnancy.
2. Anæmia from post-partum hæmorrhage.
3. Post-partum anæmia, and
4. The acute anæmia of post-partum sepsis.

1. *The severe anæmia of pregnancy*:—It is well known that the blood of the pregnant woman shows in the early months a diminution of red corpuscles, a low hæmoglobin and a slight leucocytosis, to be followed by a rise to or near normal in about the ninth month. A slight pallor in the early months is common and is often associated with the morning vomiting or dyspepsia. This usual, mild case of anæmia of pregnancy may pass on to a grave and fatal form, when the number of red corpuscle may be as low as 850,000; the leucocytes 14,000; the hæmoglobin 20; and the colour index 1.12. The lymphocytes may be increased 30 per cent. and there may be extreme irregularity in size and shape of the red cells.

2. *Anæmia from post-partum Hæmorrhage*:—This type of anæmia may be sub-divided into (a) The anæmia following profuse hæmorrhage and (b) The anæmia following repeated small hæmorrhages.

• Specially contributed to the "*Antiseptic*."

(a) In this variety, the bleeding may be profuse and rapidly fatal to call for treatment by the physician.

(b) In this variety, the anæmia not infrequently follows abortion, more rarely repeated bleeding after delivery at term. The patient may be losing blood intermittently, not any large amount, but every few days a clot or two. There may be slight, irregular fever. The red corpuscles may number about 2,500,000 and the leucocytes about 12,500. The red blood cells may be irregular in size and shape, and many normoblasts and numerous platelets may be present.

3. *Post-partum anæmia*:—This variety of anæmia is very commonly met with. After a normal delivery without excessive loss of blood, the patients begin to get pale and out of breath and within a few weeks, the blood count may fall below 2,000,000 and the anæmia may progress and prove fatal in from 8 to 12 weeks. It has been found by experience that there is a large percentage of recoveries and that recurrence is not common in this form of anæmia. The red corpuscles fall below 2,000,000 and are extremely irregular in size and form. The hæmoglobin percentage may be only from 15 to 20 per cent.

4. *The acute anæmia of post-partum sepsis*.—In certain types of sepsis, there is rapid blood destruction. In no condition is there such rapid hæmolysis as in post-partum sepsis—a form of anæmia not sufficiently recognised. To the nature of the hæmolytic agent in this form of anæmia there is no clue, any more than in that more baffling of all blood diseases, Addison's anæmia. Most of the cases run a very rapid fatal course, the duration of the malady being from about a week to a month. There is severe sepsis with high irregular fever and progressive anæmia. The blood count generally is found to be R. B. C. 1,750,000 per c. mm.; leucocytes 12,000; hæmoglobin from 16 to 30; colour index 48. The irregularity in size and shape of the red cells was extreme in this variety, and there are also found many normoblasts. The treatment of all the above varieties of anæmia of pregnancy and the post-partum state is that of the severer forms—fresh air, rest, nourishing easily digestible food, iron and arsenic, and if the blood count is very low transfusion may be employed.

SOME PATHOLOGICAL CONDITIONS OF THE VULVA

BY

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There are some pathological conditions of the vulva to which at the present juncture, one might well direct special attention. Not infrequently a patient complains of vulvar irritation and itching, and without examination

is given advice as to treatment and procedure. Generally speaking, this is a practice that should be condemned, as it is most essential that a careful examination should be made for diagnostic purposes as a preliminary to any form of treatment, and besides, if care is not so taken to establish a diagnosis, it is quite possible that in many instances definite harm to the patient may result.

No physician or surgeon should prejudice his patient or himself by not insisting on and conducting a careful examination before ordering or prescribing. To treat symptoms instead of the condition from which the symptoms arise, is a practice too often followed and one which cannot be too strongly condemned.

Most diseases of the vulva give rise to irritation and itching. Causes of the symptoms are very numerous, and though some of these, as, for instance, uncleanliness, pediculi, infections, erythema, and eczema of diabetic or non-diabetic origin, are more or less common to all periods of life, one must specially seek out in the child the possibility of errors in diet; errors in dress both by day and night; lack of general and local care, abnormal condition of the urine and feces; irritation from thread worms inhabiting the anal canal and the lower part of the rectum.

In the adult female special consideration must be given to conditions incident to pregnancy, as congestion or varicosity of veins; to infection with or without sores, or œdema or involvement of Bartholin's glands, the urethra or Skene's tubules; and to irritation from discharge resulting from diseases of the genital tract, and also to conditions prone to occur at a somewhat later period in life.

As the menopause approaches, is being established, or in the period of life beyond, irritation and itching should be regarded with suspicion until its cause can be positively recognized. Discharges incident to infection or disease of the genital tract, or gross disease of the vulva itself, may provide a cause readily recognized, but in many cases it will require a most careful examination, backed up by clinical experience to determine the nature of the lesion. It is to the recognition and treatment of such special conditions as most commonly appear at this latter period of life that special attention is directed.

Sores may exist, and though easily seen on examination, they are not always easily recognized. Such may be due to infection, more likely syphilitic, or to malignant disease. The greatest possible care should be taken to establish the diagnosis, and it should be remembered that there is no logical excuse for allowing doubt to remain under such circumstances. The patient is entitled to a diagnosis free from doubt, and if necessary should be informed of the possibilities to an extent sufficient to ensure her submitting to such procedures as will tend towards a positive diagnosis.

Much may be learned from the medical history and from gross examination of the sore and neighbouring glands, but it is obvious that in this locality, as in most others, if malignant disease has become so gross as to be readily recognized at first sight, it has reached a stage in which the most radical treatment may avail little more than temporary relief.

Application of the Wassermann test may be of value, but a negative finding does not necessarily exclude syphilis, while a positive finding does not substantiate the diagnosis of syphilis as applied to the local lesion, as syphilis may be coincident with malignant disease, or the latter may be superimposed upon a lesion primarily syphilitic.

Microscopic examination is probably the most useful available aid to diagnosis. In securing a section for such examination, care should be taken to get sufficient depth of tissue and to include the fused edges of the healthy and diseased parts.

Therapeutic tests continued for more than a very brief period without definite and progressive improvement are illogical and so wasteful of time as to prejudice the patient's chances for greater permanency of relief by radical measures. Treatment of such sores by caustics is unscientific and homicidal.

Medical practitioners who fail to definitely recognize vulvar sores, especially at the period of life under special consideration, either from lack of time or adequate facilities to conduct a thorough investigation, should refer such cases to those who are prepared to exhaust every possible means to make an early and accurate diagnosis, with the result that the patients may be properly advised as to treatment at the earliest possible time.

Occurring at various ages between thirty and sixty years, seldom earlier or later, and most commonly in one's experience between thirty-five and fifty years, epithelioma of the vulva manifests great variations in malignancy and rapidity of growth and extension. Local conditions in respect to heat, moisture and bacterial habitation predispose to more rapid proliferation and earlier ulceration, and also to earlier involvement of the neighbouring inguinal glands in inflammation preceding extension or by extension itself. Generally speaking, where it occurs in a younger woman who is menstruating regularly, it compares most unfavorably as regards malignancy with those cases developing later on, and especially after the menopause is established.

If a case of epithelioma presents itself too late to justify radical operation, it should never be because a medical practitioner has procrastinated and advised delay. Nothing but failure on the part of the patient to seek medical advice at the earliest possible stage, or intense malignancy of the growth before it actually attracts the patient's attention, should defer her from the

benefit of an early radical operation, involving extensive cutaneous and sub-cutaneous denudation of the vulva, together with the removal of the inguinal glands. These procedures may in suitable cases be combined in one operation, while in others it may be necessary to postpone removal of the glands until a later date when the reconstructed vulva is healed. It would seldom be feasible to remove the glands as a primary step and defer denudation on account of the difficulty of excluding infection from the growth in such a locality. If too late for radical operation, careful and mildly antiseptic toilet of the affected part, together with supporting and symptomatic treatment, will lend comfort and prolong life. Treatment by X-ray or by radium may temporarily control symptoms and to some degree retard the progress of the growth. It is to be hoped that in the future greater efficiency can be claimed for ray treatment than at present, or at least that such treatment or some other may replace operative, or may resolve some of what now appear as inoperable cases into a state in which operation can be justifiably undertaken.

In the absence of gross vulvar sores or disease of the genital tract, causing irritation and itching, the vulva may be the seat of lesions of the skin itself. In a somewhat extensive experience, one has found these cases to come mainly under two types, which though more or less distinct, have a tendency to overlap or to co-exist. Both may be more or less localized, but are more generally diffuse, at least when well established. One may be classed as a hypertrophic chronic superficial vulvitis, and the other as an atrophic chronic superficial vulvitis. In some instances the latter may supercede the former in whole or in part. It is this form that is frequently designated kraurosis vulvæ.

In the hypertrophic form, which naturally occurs at an earlier age and more in advance of the menopause, the skin becomes thickened, firm, inelastic, roughened and more or less sodden in appearance. Moisture is present and small superficial abrasions frequently exist. Distinct leucoplakic patches are occasionally observed. In the atrophic form, which is early characterized by the appearance of small, irritable, reddish-brown patches in the region of the vestibule, the remains of the hymen and the urethral orifice, the skin in the later stages becomes shrunken, dense, smooth, shiny and dry. The labia minora, and even the labia majora, in extreme cases become insignificant or unrecognizable. The clitoris becomes atrophic from contraction of the tissues around it, and the vaginal orifice may undergo marked diminution in size.

The main histological features in the hypertrophic form are the infiltration of round cells, the increase of connective tissue cells, enlargement of the papillæ, intense stratification and shedding of the superficial cells of the epidermis, while in the atrophic form the cellular elements tend to disappear on account of replacement by connective tissue undergoing contraction.

Both forms give rise to irritation and generally to itching, which sooner or later becomes intolerable. In a few cases, symptoms subside or cease spontaneously, but in the majority they are progressive. Great care and persistency is required in the treatment of such cases. The disease is a focal one and is uninfluenced to any appreciable extent by constitutional treatment. As to local treatment, one can scarcely venture an opinion as to what measures are most effective, having found that various applications designed to relieve very soon lose their efficacy, so that constant changes are required. Lotions, powders, oils and ointments are frequently submitted to trial in turn, and all of them fail to produce more than temporary relief.

Nothing but the power and determination of woman to bear distress and her natural reluctance towards examination, and particularly towards operations on the external genitals deter such patients from seeking surgical advice and radical surgical treatment. That this is true is unfortunate, as in such cases as do not respond readily to medical treatment, much suffering can be eliminated by surgical treatment, involving procedures comparatively simple and free from risk; and far more important still, if such cases were submitted to radical surgical treatment as soon as the disease is established and is progressing in spite of medical treatment, the incidence of malignant disease of the vulva would be materially reduced.

Not all cases of chronic superficial vulvitis, whether hypertrophic or atrophic, or whether characterized by leukoplakia or not, progress to malignant disease, but beyond question the great majority of cases of malignant disease of the vulva have as their precursors some recognizable change in the skin, resulting from one or other of these conditions and giving rise to symptoms which should invariably be regarded as forewarnings to which the utmost heed should be given.

Surgical treatment in such conditions has, in one's experience, given most satisfactory results, both immediate and remote. Thorough and extensive denudation of the areas affected is the procedure adopted.

OUR CONTEMPORARIES.

MEDICINE.

Tuberculosis in Children—its Prevention.

BY

W. D. BEADIE, M.D.

Tuberculosis in the adult has been likened by one writer to the last verse of a song, the first verse of which was sung to the infant in its cradle.

It is the purpose of this paper to consider what may be done to silence this first verse. That a more active interest is necessary is shown by the fact that over a period of fifty years there has been a steadily decreasing mortality rate for adults suffering from this disease while the rate for children shows little or no change. It may be charged that statistics may be juggled; however, it would seem that with better system of records and improved methods of diagnosis which have been established, errors would be more likely to increase than to decrease the death rate.

Von Bering and Hamburger were among the first to advance the theory now quite generally accepted, that almost everyone has at some time been infected with tuberculosis and that this infection takes place in childhood. The onset of trouble in after life is regarded as a reactivation of the earlier infection, brought about by a lowering of resistance in the individual due to some excessive mental or physical strain. We see the youth of both sexes frequently breaking down at puberty, the young mother at the birth of a child, the business man striving to meet strenuous competition, etc.

Tuberculin tests in young children in a vast majority of cases react positively after the age of four or five years, demonstrating that they have a tuberculous infection hidden away somewhere; this is confirmed by post mortem records of children dying from various causes. The reason that the majority of those who react to tuberculin escape the disease is apparently due to the smallness of the infection which they received, and which has set up an immunity. It is thought that the quantity of infection, the size of the dose, or the repetition of small doses at very short intervals plays an important part.

Hess, in a simple experiment was able to show how the injection of small doses of tubercular bacilli into guinea pigs at frequent intervals apparently being too short for resistance to be established, while a single large dose was easily cared for.

At one time heredity was regarded as the most important factor in the cause of this disease, and while a certain number of undoubted congenital cases have been reported, it would hardly appear that any great stress should be laid on this source except to insist that actively tuberculous persons should not be permitted to marry. Parental care should be given. In most of the large cities we now find clinics where the expectant mother is watched and given advice so necessary for her own and child's welfare. Children born of an actively tuberculous mother should be removed to a safe environment immediately after birth. There should be no delay. It should be compulsory for a healthy mother to endeavour to nurse her baby, but it should be equally compulsory that an actively tuberculous mother refrain from so doing and relinquish the child to the care of healthy persons. In some places there have been established preventoria for the

care of these unfortunate offspring, where they are kept for at least one year and the results have more than justified the efforts made to protect these children. This is in line with work which has been done in preventoria for older children and which has proved so successful.

Mother's milk apparently does not contain tubercle bacilli at least. Wang and Cooley, at the Sea View Hospital at Staten Island, New York were unable to find them in a number of tests, so that it is probably not through the milk but by intimate contact with the patient that the disease is spread—hence the necessity for the child's removal from the mother's vicinity as soon as possible. Some authorities go so far as to say that every infant who is infected with tuberculosis will almost surely die before reaching the age of two years. At the Farmington, (N. J.), Preventorium, Hess declined to accept infants under one year showing a positive tuberculin test. Elliot says: "Every child under one year showing a positive reaction will die before it is two years old." Perhaps this is a too pessimistic view; nevertheless, it cannot be too strongly impressed upon those who have the care of these young patients how dangerous even a single exposure to the infection may be, and it must be insisted in every case that children should not be allowed to remain in the same house where they may be exposed to anyone suffering from active tuberculosis.

There has just come to my notice within the past month two instances of tuberculous mothers applying for admission to a sanatorium and requesting permission to bring their young babies, the attending physician in each case stating that the child should not be separated from its mother. If physicians are careless on this point, what can we expect of the laity.

Doctors in the course of their practice are seldom a source of danger, but there is the oft quoted story of the mid-wife who was in the habit of sucking the mucous from the mouths of new born children under her care, and thereby causing a considerable number of deaths until it was found that she was suffering from a far advanced tuberculosis. A relative with so-called asthma which has persisted for years should be looked upon with suspicion. Maids in a household and those having the care of young children generally should be carefully scrutinized. Another incident may be reported where two children died of tuberculous meningitis, none of the members of whose family was ill in anyway; one of the visiting nurses after careful investigation was able to elicit the fact however, that a young man, a neighbour, who was unable to work because of illness, was in the habit of caring for these children when the mother was away. He had active tuberculosis.

Cow's milk is a fertile source of infection. Bovine tubercle bacilli have been found in pulmonary disease, but they play a more important part in diseases of the glands and joints, and the law requiring cattle to be tested should be more stringently enforced. Where this cannot be done, the milk

should be pasteurized. Since pasteurized milk has been more generally used, there has been a marked reduction of this infection in children. It is curious to note that Claude Riviere thinks that an infection from Bovine Tubercle Bacilli is not altogether undesirable because of the immunity which is set up. He adds, however, that we must be careful not to permit a massive dose of infection such as might occur where milk was taken from one cow alone and that being tuberculous. Griffith found that in 930 cases of tuberculosis occurring in all ages, the bovine organism was the infecting agent, in 18.17 per cent. Wang, whose earlier investigation of tuberculosis among children in Edinburgh agreed with these findings, mentions the decline after pasteurization.

Meat from tuberculous cattle is not so dangerous because of the heat required in cooking, and it is pointed out that if less attention were paid to this and more to the milk, it might be easier to persuade farmers to have their herds tested.

The home should not be neglected by those who care for children. More fresh air is greatly desired, particularly in the homes of our farmers.

The inspection of schools is now receiving considerable attention. There is room for more work, however, so that children who are below par may be cared for. Adenoids, bad tonsils and teeth, especially, should be carefully examined and treated. It is time the medical profession was making itself heard above the educators in regard to the cramming process so frequently seen in our schools to-day, although this might be less harmful were the pupils' health more carefully watched. It is interesting to note that children who are sent to fresh air schools, now being established throughout the country for those below standard physically in a short time surpass the supposedly healthy children who remain at the regular school, not only gaining in weight but leading in their studies. This surely needs no comment.

Education among the older children should prove of benefit; lectures by health officers or other physicians to these young people would greatly aid.

Tuberculosis in infancy is more fatal than at any other time in life, and we should remember the old adage in this connection, that an ounce of prevention is worth a pound of cure.—*Practical Medicine*.

Bacillary Dysentery.

THERE are fashions in medicine as in millinery, and they are at times followed with equal lack of commonsense. It is established that emetine will cure amebic dysentery, but no one ever claimed it to be of any special

value in ordinary bacillary dysentery; but emetine is fashionable, and we consequently find it used unnecessarily in all sorts of ordinary attacks of dysentery which could be "cured" by rest in bed, suitable diet, and castor oil or epsom salts.

We quote the following conclusions from the *Quarterly Journal of Medicine*.

1. That amœbic dysentery always is, and always was, endemic and sporadic, not epidemic, and requires, as a rule, conditions peculiar to tropical and sub-tropical countries for its propagation.

2. The position of bacillary dysentery of specific bacterial origin, as regards its clinical signs, its ætiology, and its pathology, is so well proved that it cannot be relegated to the realm of "*inflammation secondary to amœbiasis*." Bacillary dysentery is generally a rapidly fatal disease in its acutest form, while the course of an amœbic infection is almost invariably a long one.

3. That all epidemics of dysentery among troops in the field are due to specific dysenteric bacilli; *their spread is due mainly to flies*, infected food, drink, and it may be to carriers of the bacillus.

4. That bacillary dysentery may be, and often is, responsible for as many casualties as the more concrete dangers of war, and as a cause of disability has taken the place of enteric in former wars.

5. That while cases of amœbic dysentery undoubtedly do occur, either alone or co-existent with some other infection such as enterica or bacillary dysentery, they are not sufficiently numerous to warrant the indiscriminate injection of emetine into every patient showing signs of diarrhœa or dysentery. *Its administration should be restricted to cases of amœbiasis definitely diagnosed by a competent microscopist*. Of course ipecacuanha and its derivative emetine, given in suitable doses over a sufficiently long period, we recognize as specifics for amœbic dysentery.

6. That all cases of diarrhœa should be diagnosed "dysentery" on clinical grounds as soon as the medical officer satisfies himself that they are passing blood and mucus; such a man is a source of infection to his fellows and he should be removed from them at once without waiting for the pathologist's report.

7. That at least 95 per cent. of the cases now occurring among white troops are of bacillary origin. Consequently all cases should receive at the earliest possible opportunity, independently of a laboratory report, treatment directed against the bacillary, and not against the amœbic, form of the disease.

The routine administration of the aperient sulphates, and to the serious cases antitoxin in massive doses, as early as possible, should be adopted in all cases of clinical dysentery in the place of emetine.

Preparations of bismuth and opium as a routine treatment are, in our opinion, definitely contra-indicated in both diseases.—(T. M. G.)

Remarks on the Influence of Abdominal Lesions on the Respiratory system.

BY

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My attention was first drawn to this subject while investigating the changes in the respiratory movements in cases of abscess of the liver. Since then I have observed the effects produced on the respiratory organs by such lesions as acute appendicitis, renal colic due to calculus, abdominal incisions for appendicitis or hernia, and other conditions involving trauma of the abdominal wall.

In all these cases a definite series of changes can be observed in the respiratory system, mechanical in nature and reflexly produced and remaining mechanical unless complicated by intrathoracic sepsis such as, for example, the spread of peritoneal infection into the pleural cavity, when we have other factors introduced which complicate the ordinary course of events. In cases not complicated by intrathoracic septic changes, we have to take into consideration two main factors, the first being the pain due to the lesion and the second the intra-abdominal pressure.

Let us consider the effects of the pain first;

In a case of acute appendicitis, for example, we have, as a result of the pain, an increase in the rigidity or tonus of the right rectus muscle, and to a certain extent of the oblique and transversalis muscles. This is reflex and protective, and produces, by immobilising the affected and painful area, a diminution in the pain. As soon as the rigidity is sufficiently pronounced for detection by palpation, a careful examination of the chest will demonstrate.

(1) a diminution in the movements of the right chest wall;

(2) a diminution in the intensity of the breath sounds over the right base;

(3) a diminution in the range of movement of the right half of the diaphragm; and,

(4) possibly a slight elevation of the right half of the diaphragm.

As the pain increases all the above changes become more and more marked, and in a few days slight dulness, accompanied by a few moist sounds, may be made out over the right base. In the absence of definite sepsis in the pleural cavity the case does not progress beyond this stage.

The removal of the appendix does not immediately do away with the signs in the right chest; in fact, the pain caused by the incision together with the effects of the anæsthetic may actually aggravate the condition, and as long as the incision remains painful, the respiratory organs will not be restored to the normal.

We have all seen cases where a healthy appendix has been removed when the patient really had a patch of pneumonia, which had been over-looked, in the right lung. This is a question of referred pain misleading the surgeon.

In this article we are dealing with the reverse process, and I wish to point out that thoracic signs of the type described above, following on or discovered after an operation, must not lead the surgeon to assume that he has made a wrong diagnosis and that the appendix was not the cause of the trouble, when only slight changes can be detected in the organ after its removal. Naturally, the increase in the thoracic signs for a day or two after the operation still further tends to confirm his suspicions concerning the correctness of the diagnosis.

The same sequence of intra-thoracic changes follows in the other abdominal conditions I have mentioned above, and in fact in any condition which gives rise to unilateral pain, provided the pain is sufficiently intense to cause reflex rigidity of the abdominal muscles on that side, and so mechanically restrict the movements of the chest wall.

Let us next take the second factor, *viz.*, the intra-abdominal pressure;

This is well illustrated in cases of abscess in the right lobe of the liver.

We have in the early stages a diffuse enlargement of the liver accompanied by a slight elevation and a diminution in the range of movement of the right half of the diaphragm. There are also changes in the movements of the right chest wall and in the lung, of the type described above.

As the abscess develops and enlarges, the elevation of the right half of the diaphragm increases and its range of respiratory movements diminishes until it ultimately comes to a standstill at about the level of the third rib or space.

At this stage the right lung shows slight dulness and a few moist sounds over the base and diminished breath sounds over practically the whole lung.

To a large extent the above changes are produced by the actual size of the liver, but the rigidity of the abdominal muscles, reflexly caused by the pain, is also a contributory cause.

The changes in the position and movements of the diaphragm can be easily followed by simply screening the case, and in fact an X-ray examination is of the utmost importance in determining the size and position of the liver abscess, apart from the information gained by observing the behaviour of the diaphragm.

The elevation of the diaphragm cannot be entirely due to the mechanical increase of pressure below, because, if that were so, then the diaphragm ought to get more and more tense as the size of the liver increases. But this is not the case. In fact the right half of the diaphragm is relaxed. So there must be a reflex inhibition of the tonus of this half, and this accounts for the fact that the elevation terminates abruptly near the middle line, the left half retaining practically its normal level, even when the right is raised 4 to 5 inches.

This relaxation also explains the unilateral elevation and diminution in the range of movement in such conditions as appendicitis, incisions and other unilateral abdominal lesions where the increase of pressure is very slight.

Another phenomenon, which I could not account for in the first few cases of liver abscess I operated on, becomes easier to understand in view of the existence of the above changes.

It was observed that in large liver abscesses operated on transthoracically, after resecting a piece of rib and opening the pleural cavity, no inrush of air took place in those cases where no adhesions existed between the parietal and diaphragmatic layers. This could only be explained by assuming that the lung does not collapse when air is admitted into the pleural cavity, or else, that the lung had already collapsed before the operation.

As a matter of fact, we know that immobilisation of one side of the chest for a few days tends to produce gradual collapse of the lung, and in fact, I found the lung well retracted beyond the reach of my finger in all cases of large liver abscesses of some days' duration, and the resection of the rib and the opening of the pleural cavity could produce little or no immediate effect on the already retracted and collapsed lung.

Moreover the recovery of the lung in these cases, although cavity is completely shut off by adhesions in the first day or two after the operation, takes several weeks before it is complete, whereas the healthy lung accidentally allowed to collapse in a case in which a piece of rib was used for grafting purposes, took only 48 hours before expanding to the full extent of the pleural cavity. This is naturally to be expected, as a lung which slowly collapses adapts itself to its diminishing size and undergoes definite structural changes, whereas a sudden collapse of a healthy lung leaves the organ in the best condition for a rapid resumption of its original size and shape as soon as the pleural cavity is rendered air-tight.

So we see that the pain accompanying a unilateral abdominal lesion reflexly produces an increased tonus in the abdominal muscles of that side and this mechanically restricts the respiratory movements of the chest wall. There is also a restriction of the movements of the corresponding half of the diaphragm and a diminution in its tonus allowing it to be easily elevated if any increase in the intra-abdominal pressure should co-exist. In fact, the increased pressure produced by the increased rigidity of the abdominal muscles is sufficient to produce detectable elevation, in a case of appendicitis for example.

This unilateral diminution in the activity of the chest wall and diaphragm, if progressive, causes changes in the lung, leading ultimately to complete collapse, if the thoracic and diaphragmatic movements are brought to a standstill.

Physiologically the anterior and lateral abdominal muscles are antagonistic in their action to the diaphragm, and we know that an increase in the tonus of a particular group of muscles produces a corresponding inhibition of the tonus of the antagonistic group.

The behaviour of the diaphragm in the conditions I have described above is only what, after all, one has a right to expect.

In bilateral abdominal conditions, such as ascites, uterine fibroids, cystic swellings, etc., two main facts have to be kept in mind in estimating the effects they are likely to produce on the respiratory organs, viz:—

(1) that most of these bilateral conditions are not accompanied by any marked degree of pain, and so the influence of a reflexly increased tonus in the abdominal muscles does not come into operation;

(2) that bilateral changes in the lungs of the type described above prove fatal long before complete collapse of both lungs has occurred.

In conclusion, I wish to thank Lieutenant-Colonel Brian Watts, D.S.O., for permission to publish this article.—*Indian Medical Gazette.*

Cholera.

The following interesting method of treatment is given in the *Tropical Diseases Bulletin*:—

The author's experience, gained while in charge of a hospital at Nish after the peace of Bukarest (Balkan War), leads him to place the greatest reliance on Stumpf's bolus treatment to the exclusion of all others, including hypertonic saline injections, which he dismisses as merely symptomatic. He claims to have been able to reduce the mortality from 45 to 2 or 3 per cent. The method is to mix equal volumes of water and bolus alba (kaolin) putting the latter into the former (about 100 gm. of kaolin to $\frac{1}{2}$ litre of water) and allowing the patient to take a glassful cold every hour or half hour. It is rarely necessary to take more than 6 glasses (= about 200 gm. kaolin) in the first 12 hours. Generally the vomiting soon ceases, the pulse improves and the patient sleeps. During the second 12 hours and the following day one gives, according to the patient's condition, several glasses of the mixture, then for a few days a light diet. If the case is treated in this way from the beginning cure results in 24 hours and the patient can leave the hospital in three days. Should the case be so bad that the stomach and intestines are atonic, the bolus mixture must be given by stomach pump, or if that is not possible as an enema. It is important that, during the 18 hours which follow the beginning of the treatment, except for water, neither food nor drink should be given.

All forms of gastric disturbance whether due to cholera nostras or metallic poisons, etc., are benefited by this treatment, which apparently relies upon the great absorbing power of the fine particles of aluminium silicate. An interesting history of the drug accompanies the paper.—*Indian Medical Gazette.*

SURGERY.

Calculi of the Prostate.

BY

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I here report three cases of calculi of the prostate; one in which two calculi were present; another from which twelve faceted calculi were removed, and a third with forty-six seedling calculi.

Prostatic calculi usually occur in middle life and old age. In the three cases that have so far come under my notice, the largest stones occurred in youths of nineteen and twenty, and small calculi in a man of thirty-five.

As to the origin of prostatic calculi we know that, though lodged in the region of the prostate, they may have three modes of origin and formation:—

1. They may be formed in the *substance of the prostate gland* itself. They have then as their basis the corpora amylacea with varying amounts of calcium phosphate and carbonate deposited round them, giving rise to stones varying in size from grains of sand to large calculi.

2. They may be formed in *pouches*, congenital or acquired, that communicate with the prostatic urethra, catching up deposits from the urine and eventually forming stones that are more or less the moulds of the pockets that lodge them.

3. They may have their origin in the *kidney or bladder* and become lodged in the prostatic urethra secondarily where successive phosphate deposits cause an increase in their size and mould them to the shape of the passage or diverticulum that gives them lodgment.

I shall now give the accounts of my cases and comment on them later.

CASE I.

Two Prostatic Calculi and one Vesical Calculus.

P., a highly neurotic Singhalese, aged 20, was admitted into the General Hospital, complaining of the following symptoms. Frequency of micturition (about ten times during the day and about fifteen times at night, giving him little sleep). Micturition was accompanied by a burning sensation, especially towards the end of the act, when he experienced a scraping sensation, beginning at the anus and ending at the meatus. In spite of severe straining the stream was thin and weak, and the last few drops contained a thick white precipitate—phosphates. Micturition was most easily accomplished when he lay on his side, but was almost impossible when standing, owing to sudden blockage and interruption of flow. This effect was no doubt contributed to by the loose stone I subsequently found in his bladder. During the day, therefore, he found it easier to micturate sitting on his haunches (a method much in vogue amongst the natives here). Micturition under the best of circumstances was torture. I saw him lying on his side straining prodigiously, groaning in agony, and pressing with his fingers forcibly on the perineum, and the result of all was a thin feeble stream of urine rapidly passing into a few drops, which soon ceased.

There was dribbling in the intervals of micturition, but the bladder was not distended. He sometimes felt a small foreign body move in the fossa navicularis (referred sensation). He never passed blood or stones per urethra: but has often noticed white pieces like "cocoanut scrapings" in his urine. There were no genital symptoms. This state of things had been going on for ten months.

The patient had undergone twelve months' imprisonment in a Ceylon goal, from which he was released only three months ago. In goal he had done hard labour on a diet of rice, coffee, dry fish, hard bread, and meat. After one month's imprisonment he received lashes. He had hardly been three months in gaol when he noticed the first symptom of his disease, namely, frequency of micturition.

On making a rectal examination, which I had to do under anaesthesia owing to the severity of pain, I felt the grating of two stones lodged in the region of the prostate, and confirmed this on passing a sound, when I also detected another stone lying loose in the bladder. Prostatitis and deferentitis were present.

Operation.—I performed suprapubic cystotomy and removed three stones—one from the bladder 3.2 cm., long, and two from the prostatic urethra, 2 cm. and 1.4 cm. in their longest diameters, respectively. I found the bladder wall very attenuated. The prostatic stones I reached by passing my finger through the internal meatus, and extracted them with scoop and finger, aided by a finger in the rectum, without very much difficulty. They were situated about $\frac{1}{2}$ in. from the neck of the bladder; the semilunar stone was removed first. These stones were faceted for articulation with each other, and are not unlike the scaphoid and semilunar bones of the carpus. The stones were composed of phosphate and calcium carbonate.

I did not keep in a rubber catheter at the time, and regretted it afterwards, as I was only able to do so after dilating the urethra with sounds a couple of days later. I corrected his phosphaturia with urotropin, acid sodium phosphate, and a bitter infusion.

In three weeks the patient left hospital with no unpleasant symptoms and quite cheerful.

Certain points in the case call for remark.

Casper favours the pre-rectal route in the extraction of prostatic stones; I think I was well advised in having adopted the suprapubic approach in this case.

Judging from the contour of the two prostatic stones, their accurate adaptation, and the presence of phosphaturia, I think the conclusion that

these stones were formed primarily in the prostatic urethra justifiable. I am inclined to believe that the narrow portion of the bigger stone projected into the membranous urethra, the narrowest portion of the passage; it is significant that this constricted part measured 1.2 cm., the length of the membranous urethra.

The overwork, anxiety, intimidation, and bad food inseparable from the life of a convict seem to have been the causative factors in the production of the phosphaturia and calculi. At any rate, the symptoms began only three months after he went into prison.

Pressure on the perineum was an aid to micturition, serving probably to cause a slight dislodgment of the calculi. The feeling of a foreign body in the fossa navicularis was a referred sensation. Difficulty of micturition when standing was an effect of the action of gravity on the prostatic stones, whilst the sudden blockage to the urinary flow must be attributed to the vesical stone.

Dribbling in the intervals of micturition is attributable to the inability of the prostatic sphincters and the compressor urethræ to act, the latter probably owing to the intrusion of the narrow neck of the lower stone within the membranous urethra. In other words, there was mechanical incontinence of urine.

CASE 2.

One Vesical Calculus and 12 Prostatic Calculi removed by suprapubic cystotomy; subsequent perineal drainage.

W., 19, male, Singhalese, agricultural labourer, was admitted into the General Hospital, Colombo, on the 5th September, 1912, complaining of great difficulty in micturition, accompanied by a burning sensation in the urethra during the act, and of pain in the hypogastrium and penis at all times, but worse at night. He was in a highly nervous state and was continually trembling.

The present symptoms began with a white urethral discharge and burning pain, which he noticed for the first time about one year ago. He denied ever having had sexual intercourse. The symptoms continued in greater or less degree until the present time. When he came under observation micturition was very scanty and accompanied by a severe burning sensation all the way down the urethra. By dint of much straining he has been able to squeeze out a few drops of urine at frequent intervals, about 10 times during the day and 10 to 12 times during the night. A purulent urethral discharge was present, which on microscopic examination proved to be free from gonococci.

On digital examination per rectum the prostate felt stony hard, was slightly crepitant, and very painful; this at once settled the diagnosis. Further on exerting pressure on the prostate a drop of sero-purulent discharge appeared at the meatus.

Examination of the urine.—Sp. gr. 1015; alkaline; slight trace of albumen present; there was no evidence of blood; phosphates, pus, and epithelial cells were present in abundance; no gonococci in centrifuged deposit.

Operation.—On the 10th September, 1912, a sound was introduced into the bladder without much difficulty, and a grating sensation was communicated to the hand from the region of the prostate; this confirmed the diagnosis already made; also a characteristic click told of a calculus free in the bladder. Through a suprapubic incision a stone, a little smaller than a hen's egg, was removed from the bladder; and by means of a finger passed through the bladder meatus, aided by a finger in the rectum, no less than 12 faceted stones of various shapes and sizes were extracted from the prostate, which was found to be tightly packed with them; removal of the first was a somewhat difficult matter, but after that there was not very much difficulty with the rest; they were all removed by the index finger without the aid of scoop or forceps. A large rubber drainage tube was passed into the bladder and a gauze strip to the fossa of Retzius. The patient's condition after the operation was grave and showed signs of profound shock, from which he rallied under saline proctoclysis, warmth, etc.

Progress.—The temperature varied from 97°F. to 103°F. for the next twenty-two days, during which time he was given urotropine and acid sodium phosphate. There was a tendency for pus to accumulate in the prostatic cavity left by the removal of the stones; this was overcome by massage per rectum combined with urethrovessical irrigations by means of a short nozzle, the irrigating fluid finding an exit in the suprapubic wound. These measures however proved insufficient and the temperature kept up. On the 2nd October, the urethra was dilated with sounds and a quantity of encysted pus was liberated from the prostatic region. On the 12th October, the temperature still keeping high, a catheter was again passed, under an anæsthetic, and a large quantity of pus was again liberated from the same area. As the temperature still kept up and as the patient was now in a rather low condition, he was anæsthetised for the third time and perineal drainage of the prostatic pouch was established. After this his condition improved, but his temperature still continued fitful. On the 24th November a para-vesical collection of pus was evacuated, under anæsthesia, by reopening the suprapubic wound, which had quite healed by this time. From then onward recovery was uneventful but slow, and except for urethral dilatations on four subsequent occasions nothing more was done. The patient left hospital quite

recovered from his prolonged illness and without fistula. I have lost touch with him since then.

Description of Calculi.—The vesical stone measured 5.3 cm. $\times$ 2.5 cm. It was rough and spiculated on its surface, as rapidly growing phosphatic calculi often are. It was laminated, the outer laminae fracturing easily in flakes.

The prostatic calculi were 12 in number. Two of the largest measured 2.2 cm. by 1 cm. and 2 cm. $\times$ 1.8 cm., respectively. The smallest was .7 cm. One was almost as round and smooth as a small marble, but it too, like the others, bore the faint but distinct marks of two facets. The rest were of various shapes and sizes; they fractured easily, and carried different-shaped facets, many of which were saddle-shaped. One of them presented as many as 4 facets; several contained 3 or 2; even the smallest had at least one facet. They were somewhat rough on their non-articular surfaces. Some fractured fairly easily, others were harder and more compact. When dry they presented a mottled appearance; and were stained a patchy light yellow.

Chemical composition of the calculi.—The vesical calculus and one of the prostatic calculi were sent to Mr. G. T. Symons, to whom I am indebted for the following analysis:—

The vesical calculus consisted of a dense inner core, which contained mostly urates with some calcium phosphate. The next layer, which was looser, contained the same mixture but not so much urate. The outer loose layer contained calcium phosphate with a trace of calcium carbonate, but no urates.

The prostatic calculus was composed in its central part largely of urates; the outer portion contained in addition a considerable proportion of calcium phosphate.

Comments.—Judging from the history of this case I am inclined to think that large stones were formed primarily in pouches communicating with prostatic urethra. This form usually occurs in young men. The case previously reported by me also comes under this category. What the origin is of the pocket that predisposes to this stone formation, it is difficult to say; perhaps in this case it was congenital in the first instance, and then as the stones gradually formed they excavated for themselves roomier recesses by irritation round stagnating deposits, thus preparing the way for further deposits and faceted calculi. Chronic abscesses of the prostate may, it is true, open into the urethra and create a pocket in which a calculus may lodge or form; but there is no reason to suspect such an origin in this case, as there was no antecedent history of prostatic trouble; his earliest

symptoms were urethral discharge, and a burning sensation on micturition, which were no doubt the result of calculus irritation and not the cause of their formation. The composition of the core of the prostatic stone (urates) may suggest the view that a renal calculus formed the nucleus of the stone, but there is no evidence to support this in the absence of preceding symptoms of renal colic or discomfort. There is surely no reason why calculi having other composition than phosphates or carbonates should not be formed lower down the urinary tract than the kidney; a recess opening into any part of the urinary channel, or the part immediately behind a stricture is quite capable of catching up or filtering of any urinary sediment whether organic or mineral. The view that obtains with some that only phosphatic stones are formed *in situ*, and that urate, uric acid, and calcium oxalate stones found in diverticula must necessarily come from above, does not seem at all feasible.

If we look at the symptoms in this case we find that the main ones were,—Great frequency and pain on micturition, and a purulent urethral discharge. The *highly nervous state* of the patient was also a striking symptom, which I noticed in my previous case; it is due as much to pain and loss of sleep and rest as to the peculiarly unnerving nature of prostatic stimuli. The evidence of this case seems to point to the conclusion that stones may form in the prostate and give rise to no great symptoms until secondary infection or projection of the calculi into the urethra or against the vesical neck cause symptoms of urgency.

The diagnosis of these cases would not be difficult if one kept in mind the possibility of their occurrence, and made routine rectal prostatic palpation a rule in the examination of all genito-urinary cases. It is on the rectal feel that the diagnosis is made, and this may be confirmed by the sound only when the stone projects into the urethra. The X-ray is of course invaluable.

As regards the operation performed in this case I was no doubt ill-advised in the choice of my route. The tardy convalescence, and the need for operative interference on four separate occasions proves conclusively that the perineal route should have been the route of choice in this instance, as it would have afforded the best means of draining the prostatic pouch and diverticula left after removal of the stones in which fetid urine and pus collected and caused infection to spread along cellular planes, giving rise to para-rectal and para-vesical abscesses.

CASE 3.

Forty-six seedling Calculi of the Prostate, combined with urethro-rectal and other fistulae, and strictures of the penile and bulbous urethra.

S. A., 35, male, Singhalese, cultivator, came into hospital on the 31st January, 1914, complaining of great difficulty in micturition; he had also two urinary

fistulæ. There was frequency of micturition to the extent of about eight times during the day and five to six times at night. Whenever he urinated there was also an inclination to defecate; he sometimes felt that urine dribbled through the anus. Micturition was not most easily accomplished by resting on one or other buttock, especially the left, and coaxing the urine out by stroking the skin at the peno-scrotal junction. Even at the end of the micturition he never felt that he had completely emptied his bladder. Whenever the inclination to micturate was strong there was some incontinence; the urine flowing out in drops at the fistulæ and meatus.

He states that for the last three years he has not had seminal emissions during coitus, an act which he is however capable of performing. He is the father of a child aged four years but has had no children since then.

His present illness dates from 12 years ago, when he had an attack of gonorrhœa which lasted for about 18 months, and was complicated by a left epididymitis, which terminated in a small focus of suppuration. This attack left him with disordered micturition, there being great frequency (at one time almost hourly) and considerable difficulty in passing water. He states there were times when each act lasted about half an hour. Some months ago there was a profuse discharge of pus through the rectum.

Operation—Operation was performed on the 18th February, 1914. A Wheelhouse's operation was done as the bulbous stricture was an impassable one. There was also a penile stricture and a prostatic urethro-rectal fistula. The scrotal and perineal fistulous tracks were dissected down to the urethra and removed. On inserting a Wheelhouse's probe into the bladder a sensation of grittiness was communicated to the hand. This led to the discovery of a large number of minute stones. Forty-six stones were removed with a scoop—the largest were about the size of grape seeds, the majority about the size of cardamom seeds. A rubber catheter was passed from the external meatus into the bladder and tied in. The urethra was partially mobilised and the deficiencies left in it by the dissection of the fistulæ were repaired with catgut. No attempt was made to dissect up and suture the recto-urethral fistula as manipulation was difficult in the position it occupied, namely in the prostatic region. The patient left hospital six weeks later relieved of his symptoms but with the urethro-rectal fistula still persisting.

Description of the Calculi.—Forty-six were removed in all, a few being probably left behind. Four or five of the biggest were about the size of grape seeds, the others averaged about half the size. They were smooth and of various shapes; some were rounded, most flattened; the majority were more or less faceted. They came away in clusters cemented together by a glutinous material. It was difficult to say whether they occupied separate pockets or were agglomerated together in a single one.

Mr. C. T. Symons' report on one of the largest of these was as follows. It consisted mostly of calcium phosphate with a trace of another compound, probably oxalate. It contained no urates.

Comments.—This was a case in which antecedent gonorrhœa seemed to play an important part. There were strictures and fistulæ; there was undoubted evidence of persistent infection of the prostate as shown by epididymitis with suppuration and the fact that a prostatic abscess burst years later into the rectum, establishing a recto-urethral fistula. In the infected prostate and the recesses left by foci of suppuration in it seedling calculi, the so-called true prostatic calculi, formed.

As to the mode of formation of these calculi, and their relation to the corpora amylacea, it may not be out of place to summarise some views. Corpora amylacea are found in various organs of the body. Thompson says they are always present in the prostate after the twentieth year, scattered throughout the gland, chiefly in the ducts about the verumontanum; in one prostate several thousands were present. They are microscopic as a rule. Their colour is a light yellow, growing darker with age. Although like small uric acid calculi, they are not of urinary origin. Ziegler says they are due to degeneration of epithelial and connective tissue cells; others say to stagnation of gland fluid, calcified glandular epithelium, etc. Posner classes them as calculi, and English shares Posner's view, and says that a final cause of their formation is possibly a microbic invasion of the gland. The small bodies are mostly organic and the larger chiefly inorganic. According to Thompson, the corpora amylacea, having attained the size of their enclosing follicle, act as foreign bodies, and in consequence of the general law, that all mucous membranes when sufficiently irritated throw out a deposit of calcium phosphate and carbonate, they ultimately form calculi; the earthy matter contained being from 45 to 85 per cent. They are associated with glandular hypertrophy and peri-acinous round-cell infiltration; pressure atrophy may cause entire disappearance of the gland with the exception of the capsule. English points out that the paucity of symptoms is in striking contrast to the wide extent of disease in the gland, hence the great importance of physical examination. The complications apt to arise are abscess, fistula, incontinence or retention, and sexual disorders.

To return to the present case. On surveying the condition of things, we see that in addition to the prostatic calculi there were two strictures and several fistulæ present. The symptoms therefore should be warily interpreted as those caused by the calculi are almost hopelessly obscured by the other conditions. Most of the symptoms recorded were no doubt due to the strictures and fistulæ rather than to the prostatic stones.

The absence of seminal emissions may have been due to,—1. Occlusion of the common ejaculatory ducts by the prostatic abscess and stenosis of

the vas and ducts of the epididymis on one side at least—the left, where an abscess is said to have formed. It is significant that there was no atonic impotence so often associated with chronic prostatitis.

2. The presence of urethral strictures and fistulae: these are of themselves sufficient to prevent any seminal fluid present from appearing at the meatus. The fact that a son was born to him about eight years after his initial attack of gonorrhoea and epididymitis is proof that the ducts from the testicle were not completely destroyed or occluded before that time. The events that occurred after this were (a) the prostatic abscess, which burst into the rectum, and (b) the gradual tightening of the urethral strictures. It is, therefore, probable that the prostatic abscess was responsible for the absence of seminal emissions by destroying and occluding the openings of the ejaculatory ducts or by directing what little seminal fluid there was down the fistula into the rectum, the impassable bulbous stricture helping in this.

The Diagnosis of Appendicitis in Children.

R. Drachler.—The need for more accurate diagnosis of appendicitis in childhood is emphasised both by the many cases wrongly diagnosed as appendicitis, and by the many other cases not operated on till diffuse peritonitis or extensive perityphlitic abscesses have developed. The mortality from appendicitis is higher among children than adults because of the greater difficulty of diagnosis. Were they operated on at as early a stage as adults, the comparative mortality would be reversed in favour of the child.

The realisation that appendicitis is diagnosed only by means of the accompanying peritonitis is of vital importance. Appendicitis at an early stage can, of course, exist without peritonitis. But at this stage it is impossible to diagnose. It is no more possible to detect an uncomplicated ulcer of the appendix by palpation than an uncomplicated typhoid or dysenteric ulcer. An ulcer of the appendix can, however, be detected earlier than an ulcer elsewhere in the gut because in the former case the lumen of the appendix is comparatively narrow and it ends blindly. For both of which reasons peritonitis develops more readily than when other parts of the gut are involved. The most important information to elicit is the patient's condition at night. If sleep has been undisturbed, appendicitis can be excluded. For if it is present, the child is almost invariably restless at night. An early and common sign is constipation. It is exceptional in childhood for the disease to begin with diarrhoea, and when it is present, it usually indicates disease of the mucous lining of the gut at other points than the appendix. When diarrhoea is present, the tenderness demonstrable is not usually confined to the right, lower abdomen.

Opinions vary as to the significance of the temperature. Yet it is the most reliable guide to inflammatory reactions; and though it may be comparatively low or normal when the inflammation is advanced and pus has formed, it is exceedingly rare to find the course of an acute appendicitis, uncomplicated by suppurative peritonitis, not marked by a rise of temperature. The child who sits up in bed voluntarily, or who does not object to being lifted, is almost certainly not suffering from appendicitis. A very red face, in conjunction with a high temperature, is seldom seen in appendicitis or any other variety of the acute abdomen. Pneumonia may exist even in the absence of signs on auscultation and percussion. It is superfluous to ask if palpation of the abdomen hurts. Look. Reflex rigidity of the abdominal wall should determine action. If present, it points to an operation; if absent, there is no urgent need for immediate operation. But it is not always easy without great experience to determine the presence or absence of such rigidity. For reflex rigidity of the abdominal muscles to be detected, palpation should be light and superficial; and only when deep tenderness or a tumour is sought, is firm palpation necessary. Never begin with firm palpation, for this may provoke continuous pain, which is alone enough to cause rigidity of the abdominal muscles. Such firm palpation almost invariably provokes pain in pneumonia, dysentery, pyelitis and other conditions to be considered in the differential diagnosis. Hence the many mistaken diagnosis. Only in a few cases does examination under a general anæsthetic give useful information otherwise unobtainable. Before this step is taken, the presence or absence of reflex rigidity of the abdominal wall must be verified, as this sign, if present, is lost when anæsthetic is given. Reflex rigidity must also be sought at the back of the abdomen. While the child lies on his abdomen, reflex rigidity and pain are sought by laying a hand on either side of the posterior wall of the abdomen, the examiner standing to the right of the patient. Not infrequently this procedure elicits pain, such as occurs in paranephritic abscess, and reflex rigidity of the muscles, as found in the anterior abdominal wall. This reflex rigidity is demonstrable when the inflamed appendix is in contact with the posterior abdominal wall; and the presence of this sign, therefore, not only points to the existence of appendicitis, but also gives a useful clue as to the locality in which the operator may expect to find the appendix.

The writer has found the following diseases in cases sent to hospital with the diagnosis of appendicitis—measles, scarlet fever in the incubation stage, diphtheria, pneumonia, pleurisy, dysentery, pyelitis, purulent otitis media, relapsing umbilical colic, tuberculosis of the mesenteric glands, inflammation of a diverticulum of the bladder or of Meckel's diverticulum volvulus, intussusception, tumour of the kidney, hip disease, and even tumour of the brain. As soon as it is diagnosed, appendicitis in childhood should be operated on.

It is impossible to be too cautious and sceptical in diagnosing chronic appendicitis in children. Cases thus labelled seldom turn out to be appendicitis in any form. The removal of a perfectly healthy appendix may not *per se* be harmful, but undertaken during an acute illness, notably pneumonia, great harm may be done.—*Medical Review.*

**The Associated study of the clinical and the
Macroscopic and Microscopic Appear-
ances of carcinomatous Tumours
of the Breast.**

BY

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I have chosen this subject for three reasons: firstly because the condition is relatively common, secondly because the diagnosis is comparatively easy, and thirdly because the treatment, once the diagnosis is established, has been definitely determined.

The great problem in the treatment of carcinoma of the breast is its early recognition, and in this paper I propose to discuss (i) the clinical picture which will allow a diagnosis of carcinoma, and justify the complete operation without an exploratory incision, and (ii) the gross appearances of malignant disease of the breast, so that it can be recognized by exploratory incision when a positive clinical diagnosis cannot be made.

Most carcinomatous growths of the breast are hard and fibrous, and hence the term scirrhus has been largely used throughout the profession, but it must be clearly understood that many carcinomatous growths of the mammae are not in the least hard and fibrous, and do not contract, and for them the term scirrhus is a misnomer.

Carcinoma, apart from rare exceptions, originates in the acini or ducts. Spheroidal-celled carcinoma constitutes the ordinary form of carcinoma of the breast, and originates in the epithelium of the acini. It may be either hard or soft; it begins life by infiltration and involves the lymphatic system early.

Columnar-celled carcinoma is occasionally met with, and takes its origin from the epithelium of the ducts. It is the malignant evolution of a papilloma, but at the commencement of its career it does not infiltrate in the same manner as a spheroidal-celled cancer.

Over thirty years ago Thomas Bryant classified carcinoma of the breast into six clinical varieties, and modern research has shown this classification to be founded on a sound pathological basis. It, therefore, behoves us to study the clinical pictures together with the macroscopic and microscopic anatomy of each of these types:—

- (1) The very slow growing, and subsequently atrophying scirrhus carcinoma (atrophic scirrhus),
- (2) The more common variety, or hard, fibrous infiltrating form of carcinoma (hard, spheroidal-celled carcinoma).
- (3) The soft, more cellular and encephaloid variety (soft spheroidal-celled carcinoma).
- (4) The acute brawny cancer.
- (5) The colloid cancer.
- (6) The cystic carcinoma (columnar-celled carcinoma).

The macroscopic features of carcinomatous growths are best studied in the laboratory by sections made cleanly through the breast in such a way as to pass through both the nipple and the tumour. The gross appearance of the incised breast usually enables the diagnosis of cancer to be made without difficulty. The normal mammary tissue is white, soft and yielding to the fingers, whilst the cancerous tissue is usually firm and hard.

The microscopical appearance presented by the growth may be very different, not only in different tumours, but also in different parts of the same tumour. They depend mainly upon the relative proportion of the epithelial and connective tissue elements and upon the size and shape of the alveolar spaces, or, in other words, upon the size and form of the clusters of malignant cells which they contain.

Usually the acinous arrangement is lost, but not uncommonly a distinct acinous type is retained, the cells being arranged to enclose a central lumen (adeno-carcinoma).

These atypical epithelial cells occupy, invade and multiply in a more or less vascular connective tissue framework, consisting of the original stroma of the breast, which is somewhat modified and generally added to by secondary changes of an inflammatory and often partly degenerative character, set up by the irritation of the proliferating cancer cells. The so-called alveolar spaces of the stroma are to be regarded, therefore, as neither more nor less than the lymph spaces and interstices of the tissue.

1.—ATROPHIC SCIRRHUS.

Synonyms: withering scirrhus, shrinking cancer, connective tissue cancer.

Clinical Picture.—The most marked characteristic of atrophic scirrhus is its invariable tendency to produce contraction of the tissues, in other words the struggle between the neoplasm and the host is prolonged and doubtful. In a well-marked case a puckered scar, to which the skin is attached, slowly appears in the breast. The whole breast shrinks, becoming smaller than its fellow; the nipple retracts so as to be barely perceptible, but no definite tumour makes its appearance. Despite the slow evolution of the disease, it is always progressive, though patients may live for ten, twelve or fifteen years before they die.

Should the growth be irritated or interfered with, it may become active, and what has been a local disease will become transformed into a general one by lymphatic and vascular metastases.

Macroscopical Anatomy.—Here the formation of fibrous tissue has been very much more extensive from the beginning than the proliferation of epithelium. The growth is of very small size, much denser and more fibrous than the hard spheroidal-celled type, and cuts with great difficulty, usually giving a creaking sensation on section. The cut section exhibits a very dense fibrous looking cicatrix, with numerous silvery, white strands (the so-called "claws" of the cancer) radiating out into the tissues around.

Microscopical Anatomy.—The growth closely resembles fibrous tissue, but here and there a few scattered collections of epithelial cells and debris are found, which mark the true nature of the affection. On the other hand certain sections may show a total absence of epithelium.

II—HARD SPHEROIDAL CELLED CANCER.

Synonyms: scirrhus cancer, tubular cancer, hard cancer, nodular scirrhus.

Clinical Picture.—This is the most common tumour of the female breast, and presents itself as a small, well defined, very hard nodule, which can be readily palpated, but no distinct line of demarcation between healthy and diseased tissue permits it to be distinctly isolated. It rarely attains a size larger than that of a hen's egg, and in its early stages has always an irregular bossed outline. It exerts traction upon the surrounding tissues, notably upon the glandular substance, the skin in front and the pectoral fascia behind. If the growth is situated near the centre of the gland, retraction of the nipple may take place.

Three years is about the average duration of life of a person afflicted with this type of carcinoma mammae.

Macroscopical Anatomy.—The naked-eye appearance of the ordinary hard spheroidal-celled carcinoma is very characteristic and important. Even

A small nodule gives a marked resistance on section, and the cut surface becomes slightly concave or cupped, and if scraped yields a thick creamy juice. The tumour substance is greyish or bluish grey in colour (like ground glass), and marked by opaque yellowish-white lines and dots, which give it the appearance of a section of an unripe pear. The surrounding tissues, especially the skin and nipple, are drawn towards the tumour by white, fibrous radiating bands.

Two conditions closely resembling a hard spheroidal-celled cancer are an old scar tissue and an old inflamed adherent fibro-adenoma. In the so-called "diffuse scirrhus" (infiltrating carcinoma) the breast tissue is infiltrated much more widely, the tumour is softer than the above and the shrinking is less marked.

Microscopical Anatomy.—The central portion is mainly fibrous, the epithelial groves being small, with their cells compressed and more or less degenerated, the whole appearance resembling that seen in atrophic scirrhus. At the growing edge, on the other hand, the cell groups are large and abundant, the stroma being scanty, so that the appearance resembles that seen in soft spheroidal-celled carcinoma.

SOFT SPHEROIDAL CELLED CANCER.

Synonyms: encephaloid cancer, medullary or soft cancer, acinous cancer.

Clinical Picture.—All the contracting, adherent characters of a scirrhus are absent, and the tumour appears as a rapidly growing malignant neoplasm. In other words the proliferative activity of the cancerous epithelium outstrips the defensive fibrotic processes, and a large lobulated, soft, rapidly growing tumour forms in the substance of the breast, to which the skin becomes extensively adherent, and it quickly assumes a *peau d'orange* appearance. Later the skin over it becomes dusky, livid and marked by enlarged veins, and finally it ulcerates and a fungating mass of cancerous tissue protrudes.

Soft spheroidal-celled carcinoma occurs, especially in young women, and is of bad prognosis, the duration of life being a matter of months.

Macroscopical Anatomy.—Soft spheroidal-celled carcinoma usually appears as a large, soft, well localized tumour of dull yellowish-grey colour, which shows little tendency to shrink; and occasionally its centre degenerates and breaks down into a pulpy mass, mixed with blood. On section the growth offers but little resistance to the passage of a knife, the cut surface is usually flat, milky-white, and yields abundant juice on being scraped. Its margins, whilst not encapsuled, can generally be distinguished from the surrounding breast tissue. Such tumours cannot with certainty be distinguished with the naked eye from the more acute forms of sarcoma.

Microscopical Anatomy.—The striking characteristic of this type of growth is the great preponderance of the cancerous epithelium over the connective tissue stroma, for the tumour is composed of large, irregular masses of cancerous cells, which are surrounded by a delicate trabeculae of connective tissue. The atypical epithelial cells, which are the essential elements of the tumour, insinuate themselves into the lymph spaces of the adjacent tissues, and dilate them to form the alveolar spaces of the cancer. These cells, especially their nuclei, are much larger and show signs of greater reproductive activity than the cells of the gland. The intra-acinous connective tissue proliferates and become infiltrated with leucocytes.

IV.—ACUTE CANCER.

Synonyms : mastitis carcinoma, carcinoma mastitoides, brawny cancer, carcinomatous mastitis, inflamed cancer.

Clinical Picture.—This growth is characterized by a very rapid, fulminating variety of breast cancer, which, by setting up violent irritation, produces a round-celled infiltration, closely resembling a primary mastitis. It arises suddenly without the presence of any previous noted mass or area of induration, and appears as a rapid infiltration of the breast, and of the skin over it; it usually appears during pregnancy or lactation. It manifests itself as a general, painful, very rapid enlargement of the breast, which in contradistinction to the other forms of mammary cancer, is diffuse, and consequently no distinct mass can be felt in the breast on palpation. All the signs of inflammation are present, and the body temperature is raised. The gland is red, hot and oedematous, and may present a sense of fluctuation. The skin often presents the typical *peau d'orange* appearance, the subcutaneous veins are unduly prominent and the superficial lymphatics may appear as swollen, white cords radiating from the nipple.

There is rapid general dissemination of the disease with death from acute toxæmia. The duration of the cancer seldom exceeding a few weeks, and is usually from six to twelve. This form of cancer is seldom, if ever, improved by operative treatment, recurrence taking place with great virulence and rapidity. In explanation of the origin of acute cancer it has been assumed that either the whole breast simultaneously undergoes carcinomatous degeneration *en masse* (multicentric origin), or the cancer originates at one spot (unicentric origin) and rapidly spreads throughout the whole gland by way of the lymphatics. The latter is probably the usual, if not the invariable, course of events. The surgeon will be saved from confounding these tumours with abscesses, by observing there is a suspicious amount of solid material about the base of the supposed abscess, and that the skin, though red and inflamed, is also thickened and infiltrated like pikskin.

Macroscopical Anatomy.—The tumour substance almost entirely replaces the breast tissue. It consists of lobules of soft granular growth, which are of purplish-red colour, frequently exhibiting small necrotic areas and patches of hæmorrhage.

Microscopic Anatomy.—The chief feature is the secondary inflammatory reaction set up around the cancerous cell masses, giving rise to a general diffuse, round-celled infiltration and connective tissue hyperplasia, often so profound as to terminate in necrosis. The growth itself has in the main the characteristics of a soft spheroidal-celled carcinoma; the cell masses are large and the intervening stroma scanty.

V.—COLLOID CANCER.

Synonyms : gelatinous cancer, mucoid cancer.

Clinical Picture.—Colloid degeneration of a cancer, unless the skin is invaded, can only be recognized when the breast is cut across, and hence is of little clinical importance. The tumour usually begins about middle life as a circumscribed, firm, nodular tumour of slow growth, a history of five to ten years' duration being frequently given. Colloid degeneration, although causing an increase in the size of the tumour and an absence of the signs depending upon contraction, usually retards the dissemination of the growth, and diminishes its tendency to infiltrate until it becomes one of the most benign of breast cancers.

Macroscopical Anatomy.—It is uncommon to find a tumour in which colloid degeneration has invaded the whole of the growth. As a rule a considerable part remains unchanged, and retains the ordinary appearance of a hard spheroidal-celled cancer. The affected portion shows areas presenting a fine reticulum, the meshes of which are filled with a clear colourless or yellowish-glutinous material.

Microscopical Anatomy.—The process is first manifested by the appearance of a globule of colloid material in a cancerous cell, and finally the cell becomes completely destroyed, its cell wall gives way and the globule becomes free. Later the alveoli become distended by the colloid matter until they become visible to the naked eye, appearing as a delicate network filled with jelly-like substance.

VI.—COLUMNAR-CELLED CARCINOMA.

Synonyms : duct carcinoma, villous carcinoma, malignant papilloma, papillary cystocarcinoma tubular carcinoma (Mellish).

Clinical Picture.—This form of cancer of the breast, which usually only appears in patients over middle age, is rare. The tumour is most commonly situated beneath or near the nipple, which is usually not retracted. It is much softer than the common form of spheroidal carcinoma, and evidence of

shrinking is usually absent. A blood-stained discharge from the nipple may be present in both columnar-celled cancer and duct papilloma, but if this symptom exists in a woman of 42 years or upwards, together with a firm (infiltrating) tumour near the base of the nipple, which is not retracted, the diagnosis can be made with tolerable certainty (Bloodgood).

Columnar-celled carcinoma runs a much less malignant course than spheroidal-celled cancer, and invasion of the lymphatic glands is late.

Macroscopical Anatomy.—The descriptions of various authors, regarding columnar-celled carcinoma, are even now very conflicting, and it appears that further researches into its structure must be made before definite statements are justifiable.

The substance of the tumour is usually firm, but may be exceedingly soft and friable; its colour varies from pink to dark brown or red, according to the amount of hæmorrhage into the growth, and in some cases the altered blood may closely resemble a melanotic deposit. The cut surface presents a more or less definitely cystic structure, the spaces being occupied by altered blood, caseous debris of cancerous epithelium or vascular papillomatous growth.

The essential difference between columnar-celled carcinoma and a simple duct papilloma is that in the latter the growth is entirely confined to the interior of a dilated duct, whilst in the carcinoma the growth extends from the duct into the tissues around in the form of spaces lined with columnar epithelium. Columnar-celled carcinoma of the breast does not always assume the above form, but may be met with as a growth which cannot with certainty be distinguished by naked-eye examination from the spheroidal-celled carcinoma.

Microscopical Appearance.—The tumour consists of a meshwork of irregular spaces lying in a delicate cellular stroma. Into many of the spaces irregular papillary processes project; the epithelium lining the spaces is in many parts a single layer of cubical or columnar cells; in other parts the lining epithelium has proliferated into considerable masses of spheroidal cells, which may almost entirely occupy the lumen of the spaces.

Cystic cavities, filled with altered blood of all colours, are exceedingly common, and extravasation of blood may take place amongst the cellular elements.

Since Thomas Bryant's classification was first instituted three more types of cancer of the breast have been more or less isolated from the medley of breast diseases, namely: adeno-carcinoma. (Halsted), *carcinoma simplex*, and carcinomatous cysts (Bloodgood), and to complete our description we will devote a few lines to the description of each of these three types.—

Medical Journal of Australia.

OBSTETRICS AND GYNÆCOLOGY.

Quinine in Labour.

A. G. Lauritzen. The supply of pituitrin to Denmark having failed, the writer has been driven to testing the claims of Halban and Kohler on behalf of quinine ("REVIEW," p. 140). These writers insist that quinine is an even better ecboic than pituitrin, which entirely fails in certain stages of pregnancy and labour. The salt of quinine they recommend is the bihydrochloride, which is provided in sterile ampullæ containing 0.25 gram, dissolved in I. c. c. of water. The cost of 10 such ampullæ is only kr. 2.50 (2/10), and as only 2 ampullæ are needed in each case, the cost is about one-third of that of pituitrin. This solution does not crystallise out, and is unaffected by boiling. It is liable to turn a little yellow, but its effectiveness is not lessened thereby. In the following summary of results obtained by Halban and Kohler the conditions under which the quinine was given are put in four categories. The figures indicate the number of cases treated, success or failure being indicated by a plus or a minus sign. In the parallel column are given the effects of pituitrin on the same conditions.

QUININE.	PITUITRIN.
(1)	(1)
Uterine Inertia in the stages of Dilatation and Expulsion.	
Incomplete inertia 3 +	Results negative in the stage
Complete inertia 7 +	of dilatation, positive in
Inertia with early escape of liquor 4 +	the stage of expulsion.
(2)	(2)
Induced Abortion.	
Before term 5 —	Results —
At term 8 +, 1 —	
(3)	(3)
Accidental Abortion.	
Imminent abortion 5 +, 1 —	Results —
Abortion already started 10 +	
Incomplete abortion 3 +, 9 —	
(4)	(4)
Atony of the Uterus.	
Post abortum 2 +	Post abortum —
Post partum 1 doubtful action.	Post partum +

The doses ranged from 0.1 to 0.5 gram. The latter was the usual dose, and the strength of the solution was 25 per cent. The action of doses below 0.5 gram is just as rapid, but not so prolonged. When no action follows

within 30 minutes another injection of 0.5 gram may be given, and in certain cases as many as 4 injections. Whereas intravenous injections act instantaneously or within 3 to 4 minutes, the effect of intramuscular injections, which are preferable, is, as a rule, delayed 10 to 20 minutes. The pains are of the usual character and can be provoked as soon as the uterus is ripe for labour. Quinine, in other words, is effective in the earliest stages of labour when the organic ecbolics are inert. So far, injections of quinine in labour have not given rise to worse complications than tinnitus, a sensation as of blood rushing to the head, and an abnormal taste. No ill-effects have been observed on the child. The writer has tested this method in a dozen cases, of which the following are examples.

A 2-para, aged 38, who had not previously gone to term, and who had aborted 7 years earlier, was seen at term. There was no mechanical hindrance to labour, but after it had lasted several hours the pains became weak infrequent and sometimes very painful. After the escape of the liquor amnii they ceased altogether. At this stage examination revealed complete dilatation of the os and the head impacted in the true pelvis. The foetal heart sounds were satisfactory. An intravenous injection of 0.5 gram of quinine was followed in 5 minutes by labour pains, which recurred at intervals of 3 and later of 2 minutes, increasing in intensity. Within 45 minutes of the injection an infant, weighing over 7 lb. was born, crying freely at once. Altogether labour had lasted 33 hours. There was a slight tear of the perinæum. The placenta was expelled 20 minutes later by Crede's method. No after pains or atony of the uterus followed, and there were no signs of quinine poisoning. The pains provoked in such a case by quinine may not have been as great as those following the administration of pituitrin, but they were of a more normal character. The following case illustrates the effect of quinine on primary uterine inertia in the stage of dilatation.

A 2-para, aged 31, had last been confined 6 years before, when labour had lasted 15 hours and had terminated spontaneously. At term slight pains continued for about 2 days and nights. On the third night they became stronger, and the liquor amnii escaped. This was followed by complete uterine inertia. On examination at 8 a. m. a normal pelvis was found. The head was still movable over the brim of the pelvis, and the os was only partially dilated. The foetal heart sounds were satisfactory. About 4 minutes after the intravenous injection of 0.5 gram of quinine pains began, recurring every 5 minutes. After 1½ hours the head had descended into the pelvis and the dilatation of the os was complete. The pains were now stronger and recurred every 2 to 3 minutes. Twenty minutes later an infant, weighing 8 lb. and screaming at once, was born. The placenta came away spontaneously 15 minutes later. There were no after-pains or atony of the uterus, and the other effects of the quinine were confined to tingling in the fingers, felt directly after injecting.

The following case is an example of the action of quinine on primary uterine inertia in a primipara—a condition in which pituitrin is apt to fail.

A primipara, aged 31, went to term. During the first 8 hours the pains were weak. For the next 2 hours they were strong. Then they ceased. On examination 2 hours later the liquor amnii was found to have escaped. There was a breech presentation, and the os was only partially dilated. As soon as an intravenous injection of 0.5 gram of quinine was given, powerful and regular pains began again. Labour terminated within 4 hours of the injection. The delay between the birth of the breech and the head caused severe asphyxia, from which, however, the infant recovered. There was no serious post-partum hæmorrhage, and the placenta was expelled by Crede's method. Some tinnitus occurred, and the infant, which was hydrocephalic, died next day.

In another case, in a primipara, aged 28, intravenous injection 0.5 gram of quinine had no effect. Ten hours later an intramuscular injection of 0.56 gram was given, again without effect. Throughout the labour there were no definite pains, the uterus remaining in a semitonic state of contraction until twins were born. Both lived, and the puerperium was uncomplicated.

In another case, an intramuscular injection of 0.5 gram of quinine proved beneficial in incomplete abortion in the third month. In only 2 out of 12 cases did the quinine prove inert.—*Medical Review.*

OPHTHALMOLOGY.

The Treatment of Chronic Blepharitis

BY

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In a large percentage of cases the chronic ophthalmic outpatients treated here suffer from marginal blepharitis. The patients conform to a definite type, the condition being most commonly seen in strumous individuals, and more frequently in females than in males. The history often includes the statement that the trouble commenced after an attack of measles, and inquiry shows that during the illness the eyes were neglected and no protection given from strong light. Injudicious treatment of this kind in a susceptible patient is sufficient to account for the onset of the blepharitis.

Thorough personal cleanliness is necessary before any local treatment is applied; all complications of conjunctiva or lachrymal apparatus must be attended to, special care being devoted to the scalp and hair. In many cases

It is necessary to cut the hair short, and to treat the eczema, removing crusts, with liquid paraffin, shampooing the head with soap solution, and applying ointment containing resorcin and salicylic acid.

Errors of refraction should be carefully corrected, and the patient's general system improved with tonics. In the second or third week after the patient has been under observation—by which time he is wearing his correcting lenses, and is improving in general health—local treatment can be commenced. Up to this time he has been using a morning eye-bath of normal saline.

According to the type of case, treatment by the x-rays or ionization may be advised. In the mild eczematous cases a small dose of the x-rays repeated weekly will be very beneficial, the gentle stimulating effects of the rays being helpful in improving the growth of the lashes. A similar result may be obtained by passive hyperæmia. If the infection is definitely staphylococcal, vaccine treatment may be carried out simultaneously.

Ionization with zinc iodide is very useful in cases of eversion of the mucous membrane. Occasionally this eversion occurs in patches, ultimately producing irregular contractions in the lid margin. In such cases electrolysis will prevent subsequent trichiasis. It is not advisable to use strong caustics, such as pure nitrate of silver or liquor zinci chloridi. Should there be an ulcerated surface this should be painted with 5 per cent. silver nitrate or 10 per cent. zinc chloride.

When the acute stage has subsided, active hyperæmia may be produced by friction or massage of the lid borders with zinc oxide ointment, with or without the addition of salicylic acid. This should be varied by periods of treatment with one per cent. resorcin lotion followed by a 2 per cent. ointment of ammoniated mercury or oleate of mercury. A lotion of liquor carbonis detergens (1:40) is more suitable to certain cases.

In the presence of constipation or intestinal irregularities magnesium* or sodium sulphate, in combination with sulphur or iron, is usually indicated according to the following prescriptions:—

R Sulphur subltm.
Potass. tart. acid.
Magnes. sulph..... aa. partes æquales.

Sig. "One teaspoonful in milk every morning."

R Ferri sulph..... gr. xxiv. 1.5 gm.
Magnes. sulph..... 3 iiss. 10.0 gm.
Acid. sulph. dil..... m 75 5.0 ml.
Aquam..... ad 3 viii ad 240.0 ml.

S. et M. Sig. "One-eighth part thrice daily."—*Canada Practical Review.*

THE ANTISEPTIC

AUGUST, 1919

H. E. Lord Willingdon and the Madras Health Association.



At a meeting of the Office-bearers of the Madras Health Association held on the 12th August at the Banqueting Hall, His Excellency Lord Willingdon, as Chairman of the meeting, feelingly alluded to the terrible ravages of the last outbreak of Influenza in Bombay and to the appalling wastage of infant life in the country, and emphasised the need for improving conditions by every possible means. His Excellency could see no other way to do so than through an Association like the Madras Health Association, and therefore desired the co-operation of every single soul who was able to give his assistance. The next day while addressing the students of the Madras Medical College on the occasion of the annual distribution of prizes, His Excellency again made reference to the Health Association and exhorted the young men and young women "to go out and start a regular crusade to bring vitality and better life to all the people in the country."

Such being His Excellency's keenness about the health of the millions of people committed to his care, it behoves us, educated and enlightened citizens, to meet His Excellency half way and accelerate the progress of the vital movement by all possible means.

What then is the nature of the help and co-operation expected of individuals? The Hon'ble Mr. C. G. Todhunter has put in a nut-shell form and in clear terms the lines on which the Association is to work and the responsibilities which individuals, communities and the State as well have to shoulder for fructifying the scheme. He has divided the members into three sections: working, subscribing and professional members. According to this division, upon us, members of the medical profession, devolves the responsibility of spreading to our fellow-men our hard acquired knowledge by lectures, pamphlets and posters and of rendering effective assistance to the Association for getting rid of these unwelcome visitors, the periodical epidemics. In order to discharge our share of the obligations, we, medical men and medical women must meet and come to some effective and workable conclusion. Although the war and other unfortunate circumstances have somewhat depleted the normal strength of our profession, yet we have no

reason to despond. There are no less than 2,000 qualified medical men and women in this Presidency of whom as many as 262 are here in the metropolis. The education in sanitation and health of a heterogeneous population of something like 4½ millions cannot be accomplished at one stretch and by one violent effort or by a few hundreds of the medical profession. We have to make sustained efforts by each of us undertaking to educate the masses in such matters as sanitation, hygiene, public health, maternity and child-welfare, etc., by means of popular lectures.

As the first step in this direction we must all meet as early as practicable and discuss the details of how best we can further this noble undertaking, and then such of us as can, and are willing to, partake of the responsibilities should register their names in the office of the Madras Health Association. After that is done, each medical practitioner who has so agreed should hold weekly classes for those resident within the division allotted to him and teach them domestic hygiene, maternity and child-welfare, First Aid and Home Nursing. The strength of each class should be not more than 50. The men and women so trained should form themselves into an Association with a President, a Vice-President, a Secretary and such other office-bearers as may be found necessary and diffuse the knowledge gained by them by delivering popular lectures to the masses. Thus if each medical practitioner systematically holds weekly classes and sends out a batch of about 50 trained men and women at the end of each class, by the aggregate efforts of our profession the city will sooner or later be found sprinkled with an army of honorary health visitors who in turn will be doing their quota of work to further the scheme. In this way we can not only open the eyes of the masses to the evils of insanitary conditions and habits so largely prevalent at present, but also enable them to live a life free from disease and full of blissful vitality.

LOCAL FUND SUB-ASST. SURGEON'S GRIEVANCES.

The resolutions passed at successive annual conferences of the All-India Sub-Assistant Surgeons' Association show that this class of very useful medical men has a multitude of grievances. All the relief that has been so far obtained is but the recent increase of pay and the grant of commissioned ranks to Military Sub-Asst. Surgeons and Civil Sub-Asst. Surgeons in Military employ. Although the revised scale of pay has fallen short of our expectations we are none the less thankful, but we are pained to learn that the scale in its entirety has not been extended to the Local Fund Sub-Asst. Surgeons.

By G. O. No. 143, Medical, dated 1st December 1916, the cadre of Civil Sub-Asst. Surgeons was divided into four ordinary, and two special, grades with pay starting at Rs. 30 and rising to Rs. 100, promotions to the two special grades, known as Senior II and Senior I, being granted on the sole ground

of merit and ability and promotions to the other grades being quinquennial. When the Hon'ble Mr. Sadasiva Bhatt interpellated the Government as regards the case of the Local Fund Sub-Asst. Surgeons, G. O. No. 386, dated 12th March 1917, was issued extending the scale in its entirety to the Local Fund Sub-Asst. Surgeons also. Within a year after this G. O. there was a further revision of the scale of pay of Civil Sub-Asst. Surgeons as below:—

1 to 3 years' service	Rs. 50	19 to 21 years	Rs. 80
4 to 6 " "	" 55	22 to 24 " "	" 90
7 to 9 " "	" 60	Above 24 " "	" 100
10 to 12 " "	" 65	Senior II	" 110
13 to 15 " "	" 70	Senior I	" 120
16 to 18 " "	" 75		

In the ordinary course the above scale ought to have been extended to the Local Fund Sub-Asst. Surgeons also, but we find that the scale has been considerably cut off and the maximum pay which a Local Fund Sub-Asst. Surgeon, whatever his service or merit, can rise to has been limited to Rs 90.

We cannot imagine the reasonableness of this invidious distinction between Civil Sub-Asst. Surgeons and Local Fund Sub-Asst. Surgeons, especially because both are recruited from the same class of medical men and the duties expected of both are the same. On the other hand, the case of Sub-Asst. Surgeons in Local Fund Service calls for a preferential treatment in the matter of pay, because they have not got the pension privileges to lean upon in their old age. We should therefore strongly advocate the claims of these medical men for their pay being raised to the level of Civil Sub-Asst. Surgeons, if not anything higher.

CORRESPONDENCE.

The need for more Medical men on Public Bodies.

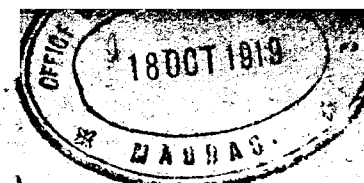
We are glad to find that the nomination of Dr. Mahammad Oosman to the Legislative Council has given satisfaction to the medical profession, as was recently expressed by Rao Sahib Dr. U. Rama Rao in his letter of the 30th last. Although personally I am not in a position to discuss the merits or demerits of the nominee, yet, having regard to the rather backward condition of Sanitation and Public Health and the pressing need for substantial reforms on the lines chalked out by Dr. U. Rama Rao, the nomination of Dr. Oosman must be welcomed. We should have been immensely pleased had the choice fallen on Dr. U. Rama Rao himself, for, as a matter of fact, his services in the cause of Hygiene and Sanitation in this benighted presidency are probably unsurpassed.

For two successive terms Dr. Rama Rao, served as an elected Commissioner of the Corporation and the many hard fights which he had during his

tenure for bringing about various reforms in the Municipal administration of this historic city are within the knowledge of all. Since his disconnection with the Corporation he has been devoting his time, energy and money to the education of the masses in matters of Sanitation and Health by means of popular lectures in slum areas, by lantern slide exhibitions and by holding periodical classes in First Aid, Home-nursing and kindred subjects. In this invaluable department of Public Health, one of the two corner stones of the State, his activities and success are unrivalled, and there is probably no non-official who has done so much and achieved so much. The Government have also recognised his services by conferring upon him the title of Rao Sahib and, quite recently, by awarding to him the Kaiser-I-Hind medal.

It is very unfortunate that such a man should have been suffered to sever his connection with the Corporation, especially when there is hardly any except Dr. Vijayaraghavulu to represent the popular interest in matters of Sanitation and Health, the maintenance of which as high a standard as possible is the paramount duty of a Municipal Corporation. In the sister Corporation of Bombay we are told that as many as 10 or 12 of the Commissioners are medical practitioners. Had the Madras Corporation also been similarly constituted much of the unhappy conditions that prevailed during the last epidemic of Influenza could have been avoided and the non-official medical men would have been of great help to the Health Officer. The Health Officer and his assistants whatever the sincerity of their convictions and solicitude for the welfare of the rate-payers, cannot secure the confidence of the people to such a large extent as the non-official medical men can. We understand that the new Municipal Bill will be brought into operation early in October next and that there will then be a general election to the Corporation. There will be ten additional seats thrown open for election. Here is the opportunity for the rate-payers, a golden opportunity for returning medical men in large numbers. Among those so returned we should very much like to see Rao Sahib Dr. U. Rama Rao for introducing the various urgent Sanitary reforms which he has set for Dr. Oosman in the Legislative Council. If unfortunately the rate-payers fail to profit by the opportunity now in view we would respectfully suggest to H. E. Lord Willingdon the desirability of at least nominating Dr. U. Rama Rao to the Corporation.

As a matter of fact most of us in the city expected that Dr. Rama Rao would be nominated to the Council, because his services fully entitled him to such a distinction, but it was not to be. Good deeds are however never lost, and it is hoped that the Government of H. E. Lord Willingdon will soon recognise the invaluable services which Dr. Rama Rao has been rendering alike to the State and the people.—*Civis*.



THE ANTISEPTIC.

Vol. XVI.]

SEPTEMBER 1919.

No. 9.
Annual Subscription Rs. 5

Original Articles.

* A. B. C. OF SKIN DISEASES.

BY

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As the successful treatment of skin diseases requires considerable care in diagnosis, I have given hereunder some of the few salient points in the treatment of skin affections for the guidance of our readers.

Primary Lesions.



MACULES are discolourations of level skin of any size. They may be inflammatory (hyperæmic) or non-inflammatory (nævus); due to excess of pigmentation (freckle) or deficiency (leucodermia); or hæmorrhagic (linear vibices, punctate petechiæ or diffuse ecchymosis).

2. **Papules** are solid elevations of the skin not larger than a pea. They may be inflammatory or non-inflammatory, and acuminate, round, flat or umbilicated in shape.
3. **Vesicles** are elevations of the skin up to the size of a pea, containing clear or slightly turbid fluid.
4. **Blebs or bullæ** are vesicles larger than a pea.
5. **Pustules** are elevations of the skin containing pus, usually developed from vesicles.
6. **Wheals** are flat, raised, solid elevations of the skin of a fleeting nature. They are rounded, with a pale centre and reddened edge.

* Specially contributed to the "Antiseptic."

7. Nodules are papules larger than a pea. (This name is better than tubercle, which is apt to be confused with tuberculosis).

8. Tumours are nodules of exaggerated size.

Secondary Lesions.

9. Crusts or scabs are dried products of diseased skin, such as blood, serum, pus and sebum.

10. Scales or squames are plates of laminated epithelium shed from the surface by the process of desquamation.

11. Pigmentation is common after many primary inflammations.

12. Excoriations or abrasions are due to the removal of more or less of the horny layer of the skin; they are attended by serous discharge and the formation of brownish scales.

13. Ulcers are caused by the inflammatory destruction of skin involving the corium; they end in scars.

14. Fissures, rhagades or "chaps" are cracks extending through the epidermis.

15. Scars or cicatrices follow destruction of the corium. They are formed of cicatricial tissue replacing the normal skin, and are usually depressed (atrophic). At times they may be elevated (hypertrophic) or pigmented.

NOTE.—The above lesions often merge one into the other; thus the small-pox papule becomes a vesicle and then a pustule, and finally ends in a scar. In herpes zoster the vesicles are primary, and the pustules and scarring secondary.

Treatment.

1. Remember that while some diseases of the skin may be cured by external treatment alone, yet in the majority of instances internal treatment will be useful or necessary.

2. Do not forget that some skin troubles tend to self-cure, as shingles and many slight forms of dermatitis. Others, such as ichthyosis, while incurable, may be relieved. Another class, again, is not only incurable, but is always fatal, *e. g.*, mycosis fungoides.

External Treatment.

1. The great general rule of external treatment of curable skin disease is to stimulate dry and chronic conditions and to soothe the moist and acute.

2. The chief stimulating agents are caustic potash, salicylic acid, nitrate of silver, carbolic acid, soft soap, iodine, blisters, sulphur, mercury, creolin, resorcin and other tar derivatives.

3. The chief soothing agents are oxide of zinc, calamine, oleate of zinc, lead, simple ointment, vaseline, lanolin, caron oil, oleate of bismuth, weak preparations of carbolic acid, boracic acid, ammoniated mercury, hot baths.

4. Antiseptic applications are of great and increasing importance in skin diseases many of which are complicated by secondary septic processes.

5. Parasitocides form an important class. The chief are sulphur, mercury, iodine, chrysarobin, carbolic and salicylic acids, resorcin and other tar preparations.

6. Remember first to remove scales and crusts before applying remedies. This may be done by soaking crusts in oil and poulticing, or by soaking the patient in a hot bath, and then scrubbing the skin with brushes or a Turkish glove.

7. External remedies may be applied to the skin in the form of baths, soaps, lotions, powders, ointments, plasters.

8. Powders may be astringent, soothing, drying, antiseptic, and are useful in moist conditions. Lotions are especially useful where other applications cannot be made during the daytime and in dealing with the hair. Ointments can be smeared over the skin or well rubbed in, or can be applied continuously on lint protected by oil-silk. A more thorough and prolonged contact can be secured by using the plaster-mulls of Unna, who incorporate various drugs in an adhesive mass spread upon thin India rubber backed with muslin.

9. Good caustics for the skin are pure carbolic acid, acid nitrate of mercury, nitrate of silver, arsenic, Coster's paste (iodine), Vienna paste, salicylic acid (the last applied in Unna's plaster-mull, which is made up of various strengths).

10. Never forget the possibility of absorption through the skin of certain drugs. Thus, cantharides absorbed from a blister may cause hæmorrhage from the kidneys. Mercury, even in the form of a weak ointment of white precipitate, may produce salivation and purging if applied to a large surface of skin. Fatal cases of poisoning have been reported from the use of perchloride of mercury lotions to the scalp.

11. Remember that some skins rebel against certain drugs. Thus, more or less severe inflammatory dermatitis may be caused by the application of tar, iodoform, salicylic acid, sulphur, and other medicaments.

Internal Treatment.

1. Remember that "the best dermatologist is the best physician".
2. Investigate the condition of the various organs of the patient, particularly as to the digestive tract and kidneys.
3. Remember the excretory function of the skin, and relieve it when necessary by stimulating elimination by other routes, as by purging and diuretics. This end may be attained by the use of saline aperients conveniently in the form of a mineral water, as Hunyadi, etc.
4. Diet should be regulated, and alcohol allowed only in strict moderation.
5. Bear in mind that alteratives and tonics are sometimes invaluable; codliver oil may cure an inveterate acne, quinine a pruritus. Iron, Nux Vomica and tonics generally are sometimes of great service.
6. Do not fly to arsenic in every case of skin disease. The less a medical man knows about that class of malady the more apt is he to use arsenic.
7. The chief general conditions that affect skin maladies are gout, rheumatism, tuberculosis, malaria and syphilis.

ANTIMONY.

The drug is sometimes recommended in eczema, prurigo and acute dermatitis. It is given in doses of the wine, 1 to 7 minims, according to the age of the patient.

ARSENIC.

1. Never give arsenic in acute inflammatory affections, especially in eczema.
2. Always administer arsenic after food. The best preparation is Fowler's solution, which may be given in small doses increased to 10 or 20 minims. Some begin badly with 10 minims.
3. Arsenic is most useful in pemphigus and in chronic psoriasis, lichen rubra, lichen planus and urticaria.
4. Remember the signs of arsenical irritation are puffy eyelids and conjunctivitis, with gastro-intestinal irritation. Even small doses may produce papular and other rashes.
5. The prolonged administration of arsenic may produce fatty degeneration of liver and kidney with albuminuria; it may set up general pigmentation of the skin and keratosis of palms and soles. Cancer may supervene on the last mentioned condition.

6. Use arsenic with the utmost caution. If good effects are not soon obtainable, discontinue the drug.

MERCURY AND IODINE.

These drugs are chiefly valuable in the treatment of syphilis, but are also of use in some of the scrofulo dermata and strumous affections.

QUININE.

This is useful in chronic urticaria, boils, pruritus, and wherever there is a malarial taint.

SALICIN AND SALICYLATES.

The salicyl group of remedies is often useful, especially in patients of a gouty or rheumatic taint. In both these diatheses, the wet pack, Turkish baths, spas, and the superheated air treatment may be of great value.

SULPHUR.

This is less useful as an internal than an external remedy. In the form of sulphide of calcium (freshly made) it is valuable in furunculosis. Icthyol, when given internally, acts on the skin by the elimination of the sulphur which it contains.

(To be continued).

THE VACCINE TREATMENT OF FEBRIS ENTERICA.

BY

S. J. CANTOR, M.B., B.S., Perth.

DEFINITION.

Febris enterica in this article is defined as the specific diseases caused by the typhoid and paratyphoid organisms, and includes typhoid fever and paratyphoid A and B. It is convenient to speak of typhoid spots, typhoid ulcers, typhoid stools, etc., in the generalized sense also, as including the same lesions of paratyphoid.

HISTORICAL NOTE.

Typhoid fever was first named in 1829, differentiated from typhus in 1836 and first fully described as a clinical entity by the work of Sir William Jenner between 1849 and 1851. The *Bacillus typhosus* was discovered by Eberth in 1880. Its source of entry is through the intestine, after being swallowed. The organism is found in the spleen, the mesenteric glands, the bile and liver and less frequently in the bone marrow, heart, lungs, kidneys,

as well as in the urine and faeces. It is also found in the earlier stages (that is, the first fortnight) in the blood, but only to a slight extent.

DIAGNOSIS.

The diagnosis of *febris enterica* is made (apart from the ordinary clinical diagnosis) by the recognition of the typhoid or paratyphoid bacillus in the blood (taken from median basilic vein into bile-peptone medium) during the first fortnight of illness. After the end of this period, the bacillus is generally absent from the blood. In the second fortnight of the disease the diagnosis is made by the Widal or para-Widal agglutination test, which is usually negative before this period. These tests are specific. During the Gallipoli campaign most of the enteric cases were paratyphoid A or paratyphoid B in more or less equal proportions; of the remaining cases 10% were typhoid. The same proportion held good for cases arising in Egypt. At that time the men had been inoculated against typhoid fever alone. Subsequently the mixed typhoid and paratyphoid A and B vaccine was employed.

In Australia the greater number of enteric cases are typhoid fever. Formerly, when the Widal agglutination test was used in an undoubted enteric case, a negative result was sometimes obtained. These cases, in the light of present knowledge, would be instances of paratyphoid fever.

THE PROBLEM OF THE CARRIER.

The carrier problem in the Australian Imperial Forces in Egypt was, about the middle of 1915, an acute one. No definite knowledge of the length of time these men remained carriers was obtainable and at first (that is, for several months) all men who had recovered from enteric were boarded to Australia to prevent the spread of the disease among the troops. About this time I was acting as a Medical Officer at No. 2 Auxiliary Hospital which was made a clearing hospital soon afterwards for all cases being boarded for Australia. I was in charge of the convalescent enteric patients, who generally numbered 100 to 130, and at one stage numbered 250. As most of these men were perfectly well and it was a big drain to send these men back, I suggested that it would be wise to retain all but the actual carriers who could be detected by bacteriological examination of the urine and faeces. After some little delay this was done; and by arrangement with the first Australian General Hospital, the men (30 a day approximately were dealt with) took their excreta to the bacteriologist who forwarded the culture plates to the Institute at Cairo. The result was satisfactory in so far as somewhat less than 5% proved to be carriers (that is, about two to three months after recovering from their disease). Afterwards these only were sent back to Australia. These figures agree with those of German investigators in 1907 who found that after six weeks 4% to 5% of typhoid fever patients were still excreting bacilli.

At Boston Hospital 23% showed bacilli in their excreta 10 days before their discharge. The condition in a small number of persons may persist indefinitely. Cases have been reported in which bacilli were excreted after two years, and in Victoria one or two cases were reported similarly several years following illness.

PROPHYLAXIS.

The problem of prophylaxis has been adequately solved by the use of the mixed vaccine. Some curious points presented themselves in regard to the bacteriology of the disease, which I was able to study while in charge of typhoid wards (100 beds) for a couple of months at the First Australian General Hospital and subsequently while acting as Assistant Bacteriologist at the same hospital. It would be out of place to refer to these points here. One point I desire to mention, however, refers to case of typhoid fever followed by a "relapse" due to paratyphoid A. One fatal case showed paratyphoid A. As mentioned, the mortality was low; and the disease itself, especially in typhoid fever, was mild and complications were rare.

VACCINE TREATMENT OF FEBRIS ENTERICA.

No reference will be made regarding other than vaccine treatment, as it seems that no other treatment is specific. A drug rarely used may be mentioned for the febrile part of the disease, *liquor ammonii acetatis*, in mixture seems as useful as any, while being the least depressing. It is undesirable also to mention the use of anti-typhoid serum which seems to have given moderately good results, as I have had little actual experience of this mode of treatment, and the results claimed by those who have used it, do not compare favourably with the results of vaccine therapy.

A chart shows the specific influence of the vaccine in the treatment of typhoid fever. Other cases gathered from a scattered literature may be quoted in addition. In 1895 Pfeiffer and Kolle described specific antitoxins in the serum of convalescents and in experimental animals. In 1896 Sir Almroth Wright inoculated two men with dead typhoid bacilli, but did nothing further towards the study of the immunity resulting. In the same year, however, Pfeiffer and Kolle repeated Wright's experiment and found that after a day or two of malaise, the constitutional effects subsided and within a few days the blood had developed a bactericidal power similar to that of convalescent typhoid patients. Further work by Wright in England led to the preventive inoculation of the troops in India, the beneficial effects of which were soon afterwards favourably commented on by Lord Kitchener, and to the extension of its use in the South African war. The dosage was somewhat similar to that now employed, except that it is now more usually employed in two stages. Other workers also showed that the negative phase

consisting in a diminution of the quantity of immune substances in the blood, was followed by a positive phase in which the quantity was greatly increased. The result of this work was preventive inoculation, which has proved so successful since, especially during the present war.

More recently there has been the tendency to use active immunization in the treatment of the disease. Autogenous vaccines have been used, while stock vaccines are also successful. Semple used both methods, giving 6 to 12 million bacilli once, or up to four times on successive days; he prefers larger doses, 15 to 30 millions daily. He records well marked improvements after the inoculations and all the patients made well marked recoveries. Smallman (1909) was convinced that the injection of the vaccine produced an undoubted good effect. The earlier workers were handicapped by the inability to differentiate typhoid from paratyphoid fever, hence they did not always get favourable results. Walters and Eaton recorded some benefit following the use of vaccine. The results so far seemed to be encouraging. Later, Wilson (1910) published the notes of six cases treated with ordinary vaccine from the Royal Army Medical College; the cases being treated otherwise on general lines. He remarks:—

Case No. 2 had been inoculated against enteric three times, once within the last year, and his serum was tested for a reaction with paratyphoid bacilli, but with a negative result. Case No. 3 stated that he had been inoculated once, but seemed doubtful on the point and on entry could be found on his medical history sheet. The remainder had not been inoculated..... Approximate bacteriological confirmation was made in all cases. Widal's reaction was positive in all cases except No. 3, in which it was negative. The injections of vaccine were given in the ordinary way into subcutaneous tissue of the arm, in the region of the deltoid. There was little or no temperature reaction. Taking 1 c.cm. of R.A.M. College vaccine to contain approximately 1,000,000,000 bacteria, the initial dose was 4½ minims or approximately 250,000,000 bacteria. This dose was given as the cases were mild at the outset. The same dose was continued in Case No. 1, but in Cases No. 3 and 4 it was increased to 9 minims and 6 minims respectively with good results as shown by the condition and temperature of the patient.

In determining the dosage and time to give the injection, he was guided chiefly by the general condition and temperature; if the patient was not progressing, but was at a standstill, his general condition being good, he was given another injection of slightly increased quantity; but if his general condition had not improved, the same or a smaller dose was given. All the patients progressed favourably and made rapid convalescence. They showed no tendency to relapse. He attached notes regarding each case. He states that the point which struck him most was the absolute difference in appearance of the patients with enteric fever treated with vaccine as compared with

other patients he had seen; they all looked much fresher and more robust and all volunteered the information that they felt decidedly more comfortable after the injection.

An inspection of the charts shows that the patients became normal in all cases before the end of the second week of the disease and within a few days to a week of the inoculation.

Prague and Senez recently reported that in 46 cases in which the vaccine treatment was commenced in the first week of typhoid, the febrile phase lasted on an average only 16 days. In a total of 120 cases they were impressed with a rarity and the simplification of treatment, as in a large number of cases no other treatment was required.

THEORY OF VACCINE TREATMENT.

The theory or rationale of vaccine therapy is as follows: Pfeiffer showed that living typhoid organisms introduced hypodermically in the guinea pig produced only a mild reaction, while given by the mouth the severe form of the disease resulted. In an actual case of typhoid fever the conditions are such that the blood and tissues are able to produce only a relatively small quantity of specific immunizing substance or typhoid antitoxin, because the bacteria (which enter the blood stream through the intestinal lesion) are killed off by the antibacterial power of the blood. This latter is proved by the blood showing no bacilli after the second week. The bacilli, being present in the blood in small numbers only, results in the slow development of the antitoxin. If the bacilli are injected as a mass infection (as is done in the hypodermic injection of vaccine) the tissues prepare large quantities of antitoxin, as proved by the rapid development of the Widal reaction and the disease comes to an end. Otherwise the Widal reaction scarcely appears before the end of the second week and may not reach its maximum till about the end of the fourth week.

VACCINE TREATMENT IN RELAPSE.

Not only is antityphoid vaccine a specific agent in curing the disease, but it may also be employed in case of a relapse. A case of my own, of which the chart contains the main notes, illustrates this particular point. The patient had two relapses, and the vaccine was used in the early part of the second relapse with a prompt response, the disease being cured within a few days.

Addendum.

VACCINE TREATMENT OF THE CARRIER.

Mention has been made above of the problem of the carrier. Generally speaking no treatment has hitherto been used, excepting the administration of

internal antiseptics, such as carbolic acid and salol for the faeces, or hexamine for the urine. It appears that hexamine is of value only during such time as it is employed, its action inhibiting the growth of the bacilli, which tend to re-appear when it is discontinued. Carriers usually give only a partial Widal reaction. If the opsonic index of the carrier is raised by hypodermic injection of antityphoid vaccine, the bacilli disappear from the excreta; and he now exhibits a well-marked Widal reaction. Most carriers tend to show bacilli in the urine only and are less likely to have contamination of the faeces; the bacillus in these chronic cases has also been recovered from bone abscess and from the bile. It is noteworthy that the blood is usually free from infection or in any case is very slightly infected. It seems to me that it is for this reason that the opsonic index is low and that the action of injecting dead bacilli into the blood is to raise the index and so kill off the organisms living in the tissues. It has been suggested that an autogeneus vaccine be employed, but if the organism be shown to be definitely typhoid or paratyphoid A or B, a stock vaccine of the suitable kind suffices. The inoculation may require repeating; if a small dose (100 to 200 millions) does not give the desired result, a larger dose (800 to 1,000 millions) is employed.

The result of inoculation is the development of a well marked Widal reaction and the sterilization of the excreta, as proved by the plate cultures. One or two workers have observed that it is desirable, from the opsonic point of view, to render the urine alkaline or neutral by drugs, such as potassium citrate.—*The Medical Journal of Australia.*

OUR CONTEMPORARIES MEDICINE

The Significance of Sprue.

Very many medical practitioners in Australia have yet to see a case of pellagra or one of sprue. But while the former is rare in the Commonwealth, the latter occurs by no means infrequently among the inhabitants of the tropical districts of Queensland. That sprue is a very serious disease cannot be denied, and it is equally evident that this affection should attract the attention of those practitioners who devote time and energy to the work of prevention of disease. The fact of its prevalence in the north renders it essential that every practitioner should be prepared to recognize a case when it is present in a patient seeking his advice. According to Dr. Lucius Nicholls, the Director of the Bacteriological and Pasteur Institute at Ceylon, sprue, pellagra and scurvy have so much in common with one another that

the diseases may be almost indistinguishable. The earliest signs of typical sprue are entirely digestive. The patient complains of dyspepsia, the tongue becomes sore and there may be superficial denudation. Ulceration appears in the mucous membrane of the mouth. A little later the tongue acquires a very characteristic appearance. The surface is red, glazed and clean, and small, deep ulcers are scattered in patches over the organ. Diarrhoea appears at this stage. The stools are cream coloured, volutinuous and frothy from excessive fermentation. In well-marked cases the characters of the motion suffice to distinguish the condition from pellagra. The oral implication may lead to a confusion with scurvy, but in the latter condition soreness of the gums and buccal mucosa is not associated with diarrhoea. It is well to remember that all three affections are apyrexial. In sprue there is no actual skin rash, but the skin of the forehead, back of the hands and other exposed parts may become roughened and present a mottled appearance. In pellagra a definite dermatitis occurs in the exposed areas of skin. This is said to be due to the injurious effects of sunlight. Purpuric rashes may occur in scurvy. Dementia and neuritis are held to be common in pellagra, but are absent in both the other diseases. Similarly, the changes in the muscles, joint and periosteum of scurvy, ascribed to hæmorrhages, are never seen in pellagra or sprue. In all three affections extreme emaciation develops in the advanced stages and is suggestive of starvation. In both sprue and pellagra the internal organs participate in this extreme emaciation. The weight of the liver and spleen may be very greatly reduced. The mucous membrane of the intestine and stomach becomes degenerated, thinned and eroded. In extreme cases of sprue or pellagra the intestinal wall may be so wasted that it is practically transparent. The changes in the organs in the three diseases consist in degeneration of parenchymatous cells leading to atrophy, cirrhosis and capillary hæmorrhages. The hæmorrhages are more numerous and larger in pellagra and scurvy than in sprue. In sprue there are no degenerative changes in the nervous system, as there are in pellagra. Sprue is essentially a disease of Europeans living in the tropics, while pellagra is an affection of the poor, whose principal article of diet is maize. Dr. Nicholls holds the opinion that sprue is an infection granted on to a condition produced by some form of deficiency in diet. He claims that an organism indistinguishable from *Streptococcus viridans*, of low virulence and having a special affinity for the tissues of the alimentary tract, plays an important part in the ætiology of this affection. He holds the view that infection is one of the causal factors in pellagra and he supports those who hold similar views concerning the ætiology of scurvy. The absence of a constituent from the diet, however, is granted in all three diseases. In the case of sprue this factor is of far smaller importance than in pellagra, while the deficiency of an essential vitamine is undoubtedly of paramount importance in scurvy. The Europeans who develop sprue in Ceylon and India always give evidence of having

made material changes in their mode of life, and especially in their diet. It is somewhat suggestive that a mild ulcerative affection of the mouth and fauces is met with the among the Cingalese. It is suggested that these people possess a racial immunity to sprue, since no other lesions than the stomatitis and involvement of the upper areas of the alimentary tract are met with. In Queensland the condition usually affects Europeans and Americans and it is much less prevalent in persons born in the tropics.—*The Medical Journal of Australia.*

Some Clinical Observations on Cases of Influenza in the present Epidemic

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This paper is not intended to give a systematic account of the disease, but merely to record a few clinical observations made at the Coast Hospital.

Incubation Period.

This is generally two days.

Symptoms.

1. Headache is usually severe, sometimes it is generalized, but most commonly frontal, more rarely temporal. It is very often accompanied by a dull retro-ocular pain, made worse by pressure on the eye-balls. In many cases pain is caused by movements of the eyes and may be so severe that patients prefer to turn the whole head rather than their eyes in looking to one side. Headache is aggravated by bending the head downwards. Transient diplopia has been noted in several cases.

2. Pain.—(a) Backache referred to the lumbo-sacral region is very common. It may also be referred to the dorsal region, of the scapulæ or

to the back of the neck, or may be experienced in all these regions conjointly. The ache in the back of the neck is often complained of as headache, but is really muscular in origin.

(b) Pain in the limbs is almost invariably referred to the posterior aspect of the lower limbs including the gluteal region. Pain in the arms is frequently present but not usually complained of, as it is overshadowed by the more severe pains in the lower limbs. These pains are aggravated by movement and pressure. The pain on moving the eyes, referred to above, is probably similar in causation.

(c) Abdominal pain will be referred to under gastro-intestinal symptoms.

3. Weakness.—A large number of patients complain that they have been suddenly taken ill with feelings of great weakness, both mental and physical. In some cases the patient is so overcome by this feeling of weakness that he may fall down.

4. Shivering.—Shivering or even a slight rigor may usher in an attack and may occasionally be repeated. A patient often complains of a sensation of "cold up and down the spine."

5. Sweating.—This is frequent at the onset and during the course of the disease and may be copious.

6. Cough.—Cough usually occurs early, but may be delayed for one or two days or, in rare instances, it may be absent. The cough is at first dry, harsh and irritable, giving the impression that the patient is continually clearing the throat. Later on this becomes more pronounced, more frequent, generally difficult and hacking, and accompanied by a little glairy sputum, finally becoming purulent.

7. Coryza.—Coryza is comparatively frequent. The upper eyelid, appear heavy and drooping, while the conjunctiva presents a similar picture to that seen in measles, only to a far less degree. The face is often flushed.

8. Epistaxis.—This has been relatively infrequent but may be severe. One case required plugging.

9. Tongue.—On the first day the tongue is large and flabby, often tremulous and indented by the teeth, giving the impression of macroglossia. It is covered by a thin, white fur. In the more severe cases the tongue rapidly becomes coated with a thick, creamy-yellow fur through which the papillæ at the margin are often visible. As the case progresses:—

(a) favourably, the epithelium is gradually shed, showing up the papillæ more definitely and presenting an appearance very similar to scarlet fever tongue;

(b) unfavourably, it becomes dry, sometimes very rapidly and may become the fissured tongue as seen in the typhoid state. Complications may occur in rare instances although the tongue remains moist and thinly coated or even comparatively clean.

(c) A peculiar tongue of the beefy type is seen that may persist without a coating.

10. *Sore Throat*.—The fauces, tonsils and soft palate are almost invariably congested. In the more severe cases the buccal mucous membrane may also be involved. The intensity of the inflammation is no index to the patient's sensation. Children complain more of sore throat than adults.

11. *Pharyngitis*.—The pharynx almost invariably shows a granular inflammation, which may persist through convalescence.

12. *Laryngitis*.—This is not uncommon, varying in degree from tickling and slight hoarseness to absolute aphonia and may, in rare instances, cause dysphagia.

13. *Tracheitis*.—This is very common. Patients will complain of a feeling of pain or rawness and tightness across the chest, which may give a sense of suffocation.

14. *Lungs*.—In the mildest cases the lungs may be quite clear. From this they may vary through all stages up to a generalized broncho-pneumonia. Large areas of lung may give classical signs of consolidation, this being caused by the running together and spreading of the broncho-pneumonic patches. The earliest abnormal sign is a harsh respiratory murmur which precedes the sticky, glutinous crepitations at the bases of the lungs, more frequently at the base of the left, which are very characteristic of influenza. Sometimes the consolidation starts at the extreme base and spreads up so as to involve the whole of the posterior surface of the lung in a short time. The intensity of the inflammation may be such that hæmorrhages, sometimes of large amount, occur. At other times patches showing classical signs of consolidation appear in various regions of the chest, giving the impression of a broncho-pneumonic patch which has spread sufficiently to be recognizable. Frank consolidation is very often heralded by flatness to percussion, diminished air entry and showers of fine crepitations at the end of inspiration. Bronchial breathing is often heard between the scapulæ, and is due to enlarged mediastinal glands. This has been verified *post mortem*.

The sputum in the early stages is generally absent, but with the increase of cough, glutinous, muco-purulent sputum appears which is dislodged and expectorated with great difficulty. If the inflammatory process remains confined to the bronchi, the sputum of the later stages is purulent, sometimes

nummular and copious. With the onset of pneumonia blood appears, either bright and fresh, as in most cases, or rusty. The intensity of the inflammation, as stated above, may be such that hæmorrhages, sometimes in larger amount, occur. In cases which have an unfavourable termination, the sputum becomes scanty and very sticky. Sometimes, in the early stages of pneumonia, a large quantity of pinkish, frothy sputum is expectorated.

15. *Gastro-Intestinal Symptoms*.—(a). Vomiting is fairly frequent; most often it is due to the strain of coughing, but at other times definitely associated with nausea.

(b) Diarrhœa is met with but not frequently. It may be so severe as to overshadow all other symptoms giving rise to what may be called a gastro-intestinal type of this disease. These cases, which are infrequent, are associated with abdominal distension, enlargement of the spleen and profound depression, so that the clinical picture is an exact counterpart of that in the third week of enteric fever. Bacteriological examinations of the blood, faeces and urine were negative and in three cases the Widal agglutination test against *B. typhosus* and *B. paratyphosus* A and B were negative also.

(c) Constipation is very much more frequent than diarrhœa. In both diarrhœa and constipation there may be severe colic.

(d) Anorexia is a very prominent symptom. Loss of taste occurs early in the majority of cases and may persist into convalescence. Perversion of taste may occur early and may persist into convalescence also.

(e) In several cases there has been rectal hæmorrhage, sometimes in large quantities up to a quarter of a litre. In one case hæmorrhage occurred in early convalescence.

(f) The spleen is seldom palpable.

16. *Genito-Urinary*.—In the female the onset of the disease very often coincided with the beginning of a normal menstrual period. If a normal menstrual period were not due, premature menstruation very often occurred, being from ten to fourteen days ahead of the normal time. In the majority of these cases there was menorrhagia or dysmenorrhœa. It is interesting to note that all these conditions have been seen after prophylactic inoculation. Polyuria has been noted at the onset of the disease in a few cases.

17. *Nervous Symptoms*.—The following may be mentioned:—

- (a) Apathy.
- (b) Mental confusion.
- (c) Lack of concentration.
- (d) Dizziness.
- (e) Herpes.

(f) Delirium is a constant accompaniment of the more severe cases. It may be divided into two classes, (i) active maniacal delirium, (ii) low muttering delirium—typhoid state. Deafness very often occurs in varying degrees. Loss of smell and taste has already been mentioned.

18. *Cardio-Vascular Symptoms*.—At the onset and during the course of the disease the arterial tension is invariably low. This persists during the course of the disease and convalescence. A dicrotic pulse is more frequent than in typhoid fever. At the onset the pulse-rate is increased in proportion to the temperature but almost immediately is slowed down disproportionately, so that a temperature of 38.8°C , may be accompanied by a pulse of 80. Towards the end of illness the pulse-rate may fall as low as 40 per minute or even lower. This slow pulse has been of good omen.

Colour.—In moderate and severe cases there is an early, slight inclination towards duskeness of the face. With the onset of pneumonia the colour becomes lilac which, with the steady extension of pneumonia, gradually deepens into definite cyanosis. Sometimes just before death the face may become ashy.

19. *Skin*.—In convalescence desquamation of the hands and forearms is common, starting as a pinhole. Falling of hair is common and well marked. Petechiæ have been noted in two cases on the upper and outer quadrants of the breasts. Petechiæ have also been noted in cases of jaundice which itself is not common. Furunculosis has been met with in a few cases in convalescence.

20. *Joints*.—Joint pains are not uncommon. Very rarely has there been effusion. The effusion may be purulent.

Further Complications.

A certain number of complications have for convenience sake been included under the heading of symptoms. The following remain to be considered :—

1. *Empyema*.—This has been relatively infrequent, occurring in only two of our cases.

2. *Parotitis*.—This has not been as frequent as one might have expected from the filthy state into which the mouth is apt to get in severe cases. In each case it has subsided without incision.

3. *Albuminuria*.—Albuminuria is fairly common sometimes in large quantities up to a half. When in large quantities there are frequently large numbers of granular casts. The condition invariably clears up rapidly.

4. *Relapse*.—Two distinct types of relapse may be distinguished.

(a) True relapse.

(b) Intercurrent relapse.

The temperature after relapse almost invariably falls by lysis a method of defervescence which is uncommon after the primary attack. Relapses may occur after the temperature has fallen, either by crisis or by lysis. Several cases have occurred in which the intercurrent relapse is repeated. The course of the relapse is generally milder than the primary attack, but may be more severe, even fatal, and in such relapses pneumonia may appear for the first time.

5. In our experience active pulmonary tuberculosis has not been much affected. We have, however, seen latent cases activated.

Types of the Disease.

1. *Apyretic*.—Here all the signs, symptoms and after-effects of an uncomplicated attack are reproduced with the fever. These are comparatively frequent.

2. *Abortive Type*.—In these cases the temperature is raised merely for a day or two, and there is a typical picture of the disease.

3. *Mild to Moderate*.—The majority of cases conform to this group. Here we include the uncomplicated types of influenza, usual course of which runs from five to seven days, generally ending by crisis. At the end of the disease there is a predominating sense of well-being, in spite of the weakness which still persists.

4. *Severe Cases*.—The cases in this category invariably have pneumonia and although at first were practically non-existent, they are now rapidly on the increase. In alcoholic and emphysematous subjects the disease is apt to go badly. This may be a reason for the greater fatality of the disease amongst males.

Treatment.

Since influenza is a self-limited disease and subject to sudden changes, both favourable and unfavourable, it is very difficult to estimate the value of any given treatment.

A. *Specific*.—(1) Serum.

(i) Immune human serum.—Intra-muscular injections of defibrinated blood from persons convalescent from pneumonia have been tried in three cases with encouraging results.

(ii) Immune horse serum.—Anti-streptococcal and anti-pneumococcal serum has been extensively used. The quantities given were 10 c. cm. of the former and 20 c.cm. of the latter, the doses being repeated daily as often as four or five times.

It has appeared to us that in some cases this method of treatment has done good. The serum was prepared by immunizing horses against strains of streptococci and pneumococci, isolated from cases occurring in the influenza epidemic in America.

(2) Vaccine.—Vaccine has been extensively used with and without calcium lactate.

(i) A sensitized vaccine containing equal quantities of *B. influenza*, *Staph. aureus* and *albus*, *Streptococcus*, *Pneumococcus*, *B. friedlander* and *M. catarrhalis* has been most often employed, the usual dose being 100 millions of each for adult males and 50 millions of each for adult females.

(ii. and iii.) The quarantine formula and that of the Board of Health have also been used. Results so far are inconclusive.

B. Symptomatic.—

(i.) Pains.—Aspirin (0.4 grm.) and caffeine citrate (0.18 grm.) have been extensively used. This has effectively controlled the pains which are sometimes excruciating.

In some cases aspirin appeared to have a dangerously depressing effect on the vaso-motor apparatus.

Salicylic acid and salicin have been much used for this purpose and have been of value; the dose given was 0.9 grm. every four hours.

Pulv. ipecac co. (0.6 grm.) in the less severe cases frequently gives a night's rest with sweating, so that the patient awakes refreshed and improved; it also relieves the pains.

Hot water bags and counter-irritation, such as mustard leaves and mustard poultices, also give relief.

(ii.) Cough.—Two different lines of treatment have been used, one stimulating, the other sedative. While neither of these has appeared to influence the condition of the lung, the sedative treatment gives much comfort to the patient.

Inhalations containing menthol, the compound tincture of benzoin, eucalyptus and camphor have given great relief, more particularly when the upper respiratory part is most affected.

Counter-irritants, such as iodine and mustard leaves, applied over the sternum and root of neck, have given relief for the unpleasant sensation of rawness and tightness across the chest, which may be very distressing in cases with tracheitis.

A spray of 2% chlorotone in paraffin oil has given much relief for hacking ineffectual cough.

Heroin (0.035 grm.) has been extensively used by one of us and has been found very effectual in controlling the cough and has been without ill-effects.

C. Stimulants.—Strychnine, caffeine, a solution of camphor in ether and olive oil, digitalis preparations and atropine have been much used hypodermically with good effect. Brandy has been proved of very little value and its use has been largely discontinued.

D. Rectal Saline Solution.—The influenza patient suffers considerably from thirst, so that it has been the practice to leave a large vessel of water at the patient's bedside and to encourage him to drink freely. In toxæmia cases where this is inadequate, rectal injections of saline solution meet an urgent indication and have, in our experience, done great good.

Convalescence.

Tonics in convalescence have been of value, those containing quinine have been most useful.—*Medical Journal of Australia.*

Acidity of the Tears, a New Sign of Death.

Prof. Lecha-Marzo.—Brissemoret and Ambard, in 1904, observed that the abdominal viscera, especially the liver and spleen, became acid, a reaction soon after death. Realising the importance of this acidification of the body fluids as a sign of death, Prof. Lecha-Marzo of Seville has studied the reaction of the lacrymal secretion. The method of procedure is simple. A piece of ordinary neutral litmus paper is placed in contact with the globe of the eye beneath the eyelids, to which light pressure is applied. In the living subject the reaction is distinctly alkaline as indicated by a blue colour, while after death the colour of the test paper is either unchanged or becomes distinctly red. The writer's researches show that this is not only the simplest test which has been devised for the detection of death, but affords the earliest information that death has occurred. During life the reaction of the tears is distinctly alkaline. After death this alkalinity rapidly lessens and becomes neutral till it passes into definite acidity, which again may give way to alkalinity when putrefaction occurs. The important fact is that the reaction of the tears is never acid during life. This reaction is rapidly developed, and is often obtained within half an hour after death, and always within 8 hours. Its rapidity of development depends on the temperature of the air, but at that of an ordinary room it usually appears within a few hours. An examination of 1079 healthy persons of both sexes and 1104 others suffering from various pathological conditions of the eyes showed without exception an alkaline reaction of the tears.—*Medical Review.*

The Nervous System in Influenza.

Wilfred Harris believes that there is no acute malady after which disturbance of the nervous system is so frequent as influenza, and none that has such varied sequelæ. Indeed, since the last great pandemic of the early 'nineties there is scarcely a disease of nerve cell or fibre that has not been ascribed to this most searching of diseases. The nervous symptoms appearing at the onset comprise severe pains at the back of the eyeballs, frontal headache, pains in the back and limbs and intense physical and mental prostration. In favourable cases the pains and lassitude pass off in a few days. In a great number of cases, however, the story is not so simple, and the tale of symptoms is lengthened by a formidable list of complications and sequelæ. In addition to the slow heart and fainting, with sudden syncopal attacks that may occur at the onset, the action of the heart may later become irregular or extremely rapid. The initial headache may persist and assume a meningitic form. Optic neuritis, with choked discs and retinitis, was not infrequently seen in the epidemic of the early 'nineties. Vision may be damaged by retro-bulbar neuritis. Embolism and thrombosis of the central artery of the retina have been recorded, while varying degrees of ophthalmoplegia have been common. Hysteroid convulsions may first draw attention to the patient's nervous condition and they may be followed by fainting, stupor or even a cataleptic state. In this category comes *stupor*, or a condition of apparent death, lasting for days, one of the scares of the year 1890. Spinal disorders that may complicate influenza are acute anterior poliomyelitis, disseminated myelitis and *herpes zoster*. Potioencephalitis has been reported. Bulbar crises, resembling the attacks seen in children with diphtheria, characterized by spasm of diaphragm or glottis have been met with, and may be rapidly fatal. Serious attacks of local neuritis, particularly brachial and sciatic neuritis, attended by trophic lesions, have been seen, while a most formidable complication, in the form of peripheral multiple neuritis, is not unknown. Among other complications and sequelæ, prolonged loss of power of smell and taste is peculiar to influenza; progressive bulbar palsy and myasthenia have apparently been precipitated by an attack; epilepsy and migraine have become aggravated; paræsthesiæ of all sorts and descriptions have followed, and, lastly, as illustrating the extraordinary effect of influenza upon the mental functions, loss of memory and an intense inertia of mind and body may be a lasting legacy.—*Medical Journal of Australia*.

Some Observations on Influenza and its early Treatment.

BY

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One of the most striking features of influenza is its overwhelming toxic effect on the vaso-motor system. This toxic effect is probably of two kinds: (1) a central effect on the vagus evidenced by the relatively slow pulse, and respiration, and (2) a direct effect on the musculature of the vaso-motor system. From the first there is a low blood-pressure, with dirotic pulse even in moderately severe cases, lowered diastolic pressure and a feeling of weakness, faintness, etc. With the loss of tone in the vaso-motor musculature the blood tends to become banked up in the veins, the capillary portion especially being congested and the blood in the pulmonary veins is dammed back. The toxic action of influenza on the vaso-motor system is thus followed by a mechanical congestion, which leads to symptoms affecting widely different organs. The various hæmorrhages are not, I think, due primarily to a destructive influence of the toxins on the vessels' walls, but are, in the main, determined by the local congestion. Petechial hæmorrhages, for instance, that one would expect to occur early if the toxin were the determining agent, are late in onset and are found usually in association with jaundice.

Let us consider some of the various congestive symptoms. Duskiness is evident with the onset even in mild cases. It is most marked as usual in the lips and ears, but the whole face partakes of the tint. It is not a simple phenomenon, however. Associated with it there may be, at times even from the onset, a lilac tinge. This lilac factor often becomes much more marked later on and is due to some chemical change in the blood. The pigmentary factor, especially in the later cyanosis, is made manifest after venesection, when, although the colour is much improved, a distinctly lilac tinge is left behind. Even without venesection this tinge will not escape notice, and it is easily seen in the blood post-mortem.

Headache, most usually frontal in site, is evidently due to venous engorgement of the frontal sinus, but there may be maxillary and sphenoidal engorgement, with corresponding headache.

Epistaxis is frequent, and here one can actually see the venous engorgement of the nose. With epistaxis the headache is relieved.

Retro-ocular pain, increased on pressing the eyeballs, is very common and is probably due to increased venous intra-orbital pressure.

Rectal hæmorrhages do not often occur and, when they do, are usually late in onset, but they may occur early and are then probably due to this same venous congestion.

Polynuria is a curious symptom. It is quite common, appears at the onset and soon passes off. It is suggested that it is due to the increased congestion in the glomeruli and that its disappearance is caused by the increased pressure of distended veins on the tubules. We then get albuminuria, which may be large in amount, with diminution of urine. This albuminuria does not seem to be the ordinary toxæmia albuminuria, nor does it seem to be a true nephritis. It is not associated with any of the ordinary symptoms of nephritis and rapidly clears up with improvement in the condition of the patient.

Muscle pain is possibly caused by a stretching of the sheaths of the muscle fibres by congestion.

Menorrhagia often appears in increased quantity on the day of onset or a day or two later. As in epistaxis, there may be great relief to the symptoms, although this is sometimes over-balanced by the mental effect, for the flow is usually quite excessive and lasts longer than usual. The effect on prognosis is considered later.

Lung signs.—One has now to consider a sign that is very constant in all but the mildest cases, and that is the presence of harsh respiration at the bases of the lungs followed by the appearance of sticky, glutinous crepitations, more common in my experience at the left base first. The character of these crepitations seems almost peculiar to influenza. I have heard them as early as six hours after onset and as they were well defined then, I have no doubt they were present long before. In cases where the onset is not quite so rapid, the crepitations may be longer in appearing. These sounds may, at a very early stage, extend to the lower angle of the scapula or even higher, and most certainly are not broncho-pneumonic in character. The whole aspect of the patient excludes that supposition. They may also appear in otherwise very mild cases. Indeed, I have observed them increase in extent when the temperature and general condition of the patient were obviously fast improving. To what, then, are they due? I suggest that they are part and parcel of the general capillary congestion, a congestion most evident in the lungs owing to the comparatively passive role of the pulmonary circulation. The harsh breathing would then represent a stage of engorgement and the crepitations the commencement of exudation from the capillaries. If the engorgement in the capillaries be great and widespread, it is possible that the patient may die quickly of an acute pulmonary oedema. I have not met with such a case personally, but am inclined to regard the truly fulminant cases, ending fatally in twenty-four hours or less,

as of this nature. In the less fulminant cases we are likely to have in addition to the exudation, small hæmorrhages into the alveoli, a condition which would then provide a most suitable soil for a true pneumonia. The physical characters of such a pneumonia would be as follows: It would be a grouped alveolar or lobular pneumonia, as distinct from a bronchitis-pneumonia; it would appear first at the bases of the lungs posteriorly, and would rapidly advance upwards. The *Medic* form of influenza was notably of this type. In our present epidemic one meets most often with a more broncho-pneumonic type. A descending bronchitis becomes a broncho-pneumonia. When this type shows consolidated areas, they may appear anywhere in the lungs; there is no regularity in their distribution, but most usually, perhaps, they are near the inferior angle of the scapula. These two types of pneumonia, though usually easily distinguishable, are seldom clear cut, but vary from the pure type of alveolar pneumonia up to any admixture of the broncho-pneumonic type. It is the mixture with the broncho-pneumonic type predominating that we have seen lately. The purer alveolar type characteristic of the *Medic* outbreak has been seldom met with. This *Medic* type seems to be associated with much greater cyanosis even in the early stages and a much more marked lilac tinge. The death-rate, too, seems to be higher. Whether the later waves of the present epidemic will be characterized by this form remains to be seen.

It will be seen from the above description of the signs in the lungs that the very mildest cases may be linked up with most fulminant cases of influenza by regarding the effect of congestion of the pulmonary capillaries and the amount of the ensuing exudation. It may also be pointed out that these changes are to be regarded as due to the primary virus. Microscopically one finds, according to Dr. J. Burton Cleland, two pulmonary processes, one consisting of extravasation of the blood into circumscribed areas of the lung, with formation of infarcts, and the other consisting of an extensive exudation usually free from fibrin, filling the alveoli. The appearance of the lungs was at times like that of the early grey hepatization of lobar pneumonia, but the changes were neither typically lobar pneumonic nor broncho-pneumonic. In what he assumed to be the early pulmonary complication there were few leucocytes.

It might be pointed out that one may get quite extensive lung signs even with consolidation, and yet the process need not be bacteriologically a pneumonia until the exudate be invaded by the pneumococcus.

We now come to a very practical point. What treatment have we that could possibly tend to prevent the supervention of pneumonia? Without pneumonia the death-rate from influenza would be practically negligible, being limited mainly to those cases of fulminant influenza associated with great oedema of the lungs. If the view that pneumonia is due to venous congestion

of the pulmonary capillaries followed by a specific exudation and later rupture of vessels providing a suitable nidus for the pneumococcus, one must obviously try to diminish the congestion. We are encouraged by the reflection that in the normal course of the disease epistaxis, especially if copious, is of good omen and that the death-rate of women is much lower than that of men, owing, I think, to their menorrhagia. These hæmorrhages, unless dangerous in themselves, should not be interfered with. These considerations lead to the conclusion that venesection early, in fair quantity and repeated if necessary, is the correct early treatment. The time at our disposal is limited, for rupture of the vessels in the lungs may take place early. Epistaxis occurs usually about the second or third day and, as we do not know in any individual case when it will come on or in what quantity, we should anticipate it. We know how often the fever subsides or nearly so at the third, fourth or fifth day; we know, also, how often this defervescence is deceptive; a relapse takes place usually associated with a pneumonia, and the chances of the patient recovering are badly prejudiced. We must, therefore, act quickly, as soon, in fact, as the patient is seen. It is here that the general condition of the patient is apt to lead us astray. He looks too well to need any active treatment and in actual practice usually gets well by the simplest of means. I should, therefore, suggest that in cases seen early, any unusual duskeness should be a signal for venesection. As a general measure there is nothing better than absolute rest in bed. By thus decreasing as much as possible the strain on the vaso-motor system, we will prevent a large number of cases going wrong. Even those patients with apparently mild infections should go to bed at once. A large proportion of the total deaths is due to neglect of this principle.

Sedatives for the irritating cough are strongly indicated. Acetyl-salicylic acid should be given freely for the headache and the various pains. *Pulv. ipecac. co.* at night, especially at the beginning, will often give a good night's rest. Both of these drugs, I think, do something more than merely relieve symptoms.

Diaphoretics and diuretics seem of use in a more or less indirect way.

There is no drug I know of that could directly influence the pulmonary circulation. Digitalis, strychnine and champhor might be of some use. Adrenalin and ergot congest the lungs and are therefore contra-indicated. I cannot say I have seen any good from pituitrin at the onset. Atropine is said to be able to check a cold by stopping exudation. I have seen no good from it in influenza except in later stages.

Vaccine Treatment.—The inoculation of influenza vaccine may give rise to an attack indistinguishable from a true attack of influenza. It is hardly reasonable, then, to expect that by adding this attack to the ordinary acute attack cure can be obtained, and in actual practice I have seen no good from

the procedure. But, because it can produce a controlled attack of influenza, vaccine seems useful in prophylaxis, but the protection is neither great nor lasting. I think the doses should be given at intervals not longer than a month.

I should like to emphasize the value of the State vaccine in the treatment of the persistent cough that often follows influenza. This vaccine consists of:—

Pneumococci	...	...	...	1,000 millions
<i>Bac. influenza</i>	...	...	...	100 millions
Streptococci	...	...	...	100 millions
<i>Staphylococci aur.</i>	...	...	...	250 millions
Gram-negative micrococci	...	...	...	250 millions

The cough is usually cleared up in a few hours. In the unsuccessful cases an autogenous vaccine is indicated. Here the treatment is in line with ordinary vaccine treatment, as it acts on a disease now become more or less chronic.—*Medical Journal of Australia.*

Coma Following Influenza.

BY

J. HORACE DOWNING, M.B., CH.B. (MELB.)

Kyneton, Victoria.

The following particulars of a case of coma following influenza may be of general interest:—

C.C., a youth of 17 years, was the third member of his family to be affected with influenza. The first one developed pneumonia and died, and the second made an uncomplicated recovery from an attack of influenza.

The patient's temperature in the evening was about 38.8° C. for 3 days and in 5 days from the onset it fell to normal and he was apparently progressing toward recovery. There was otherwise nothing to excite comment in this attack. After 3 days of apparently satisfactory convalescence his temperature again began to rise, reaching 39.7° C. on the third day. Jaundice became marked as the temperature increased and the condition was regarded as one of cholangitis, though no definite enlargement of the liver was detected. The temperature gradually subsided until after 7 days it became remitting in type, about 37.2° C. at night and 36.8° C. in the morning. After another 7 days the temperature had become normal, both morning and evening, and the patient, although somewhat wasted, was eating well, sleeping well and feeling well. He had apparently recovered.

During this attack he suffered from retention of urine and had a persistently slow pulse, not above 80 per minute at any time. He had slight,

vague, abdominal pain and complained of my hands being cold when this was not really the case. His reflexes were tested on account of the slow pulse and the skin sensibility, but nothing to indicate cerebral complications was found.

After a second period of convalescence lasting 5 days, he suddenly became semi-comatose and in 4 hours was comatose. His pupils were widely dilated, but reacted well to light. Babinski's sign was present on both sides, the knee jerks were exaggerated, ankle clonus was present and the abdominal reflexes were absent. The temperature remained normal.

From this time on, the degree of consciousness varied slightly, so that at times he was sensible but did not speak. No definite localization of the condition to one side or the other could be made. The reflexes varied almost hourly either qualitatively, or quantitatively, but in general the activity of the knee jerks diminished until they disappeared and the muscles became flaccid. On the 4th day the temperature began to rise, reaching 38.8° C. on the 6th. The optic discs were at no time choked and the cerebro-spinal fluid was clear. On the 8th day the patient died.

The above is a very brief account of an interesting and anomalous case, in which I am indebted to Dr. H. Gerald Loughran for much assistance.

Influenzal Pneumonia with Spinal Meningitis.

Sir W. Osler.—Meningitis has been a common complication in the pneumonia of the present epidemic. In ordinary pneumonia the incidence is from 2 to 3 per cent. of the fatal cases. The cerebral meninges, particularly of the cortex, are more often involved than the spinal. Spasticity, a well marked feature of the epidemic form, was not present in any one of the 25 cases of pneumonic meningitis that occurred in the writer's clinic at the Johns Hopkins Hospital. He has no personal experience of an influenzal meningitis. Lord refers to 11 cases in which the Pfeiffer bacillus was found in the exudate. The following case is worth recording from the unusual character of the lesions and from the possibility of its influenzal nature.

A man, aged about 43, with a sallow complexion and a distressed appearance, had been ill for 3 days. Respirations 44, with a marked expiratory rattle; pulse 132, regular; temperature 99°. The neck was so rigid that he could not lift the head from the pillow. The spine was arched, the muscles strongly contracted. Both upper limbs were in tonic spasm, the arms more than the forearms; he could not move the arms from the side; at intervals there was slight tremor. Both legs were rigid; the muscles stood out prominently, and the foot was extended; slight ankle clonus, knee jerks not obtainable, nor the Babinski sign. On the skin of feet and ankles was a crop of

fresh purpura. The breathing was largely abdominal, movements of the chest were slight, but more on the right than the left side. Dullness shading to flatness from the fourth left rib, extending into axilla and as high as angle of scapula behind; intense tubular breathing with fine crepitant rales.

Tetanus was suggested, but there was no wound; the spasms were extensor and tonic in character, and not unlike those seen sometimes in cerebro-spinal fever. Then he had, in addition, well marked purpura. Pneumonia is very rare as an early complication of cerebro-spinal meningitis. Altogether, as the pneumonia was so pronounced, the writer thought the spinal meninges were involved without, as usual, the cortex of the brain. Lumbar puncture was negative. Next day he remained very ill; the rigidity persisted; the temperature rose to 103°, the respirations 52. At 2 p. m. he was still conscious, the face dusky and a little sallow, the back was very rigid, and on attempting to lift his head the arms went into extensor spasm. The left leg could not be moved, and muscles and tendons stood out prominently. The purpura had attended slightly over thighs and shoulders. He died at 3 o'clock. The blood cultures were negative.

Necropsy.—Left lung airless, dark red, pleura spotted with hæmorrhages. On section much blood which, when washed off, left a mottled surface, with areas of greyish consolidation, surrounded by very dark red tissue—not the appearance of an ordinary lobar pneumonia, but the type of lesion seen in the present outbreak. Lower half of upper lobe in the same condition; the right lung was normal except for congestion at the base; very little exudate in the bronchi. The heart was normal; there were not the very dense blood clots in the cavities and in the vessels such as are seen in ordinary pneumonia. The retroperitoneum presented a uniform sheeting of blood clot surrounding the vessels and extending over the psoas muscles.

The cortical vessels of the brain were engorged, the membranes very moist, but no exudate on cortex or base, except on the posterior surface of cerebellum there was a yellowish-white patch the size of a penny. The spinal cord had a thick buttery exudate over the cervical enlargement, less in the dorsal region and abundant over the lumbar swelling and the cauda equina. There were no hæmorrhages; substance of the cord cut at different levels was moist and looked normal. Into the spinal theca and extending along the nerve roots into the foramina was a uniform sheeting of hæmorrhage obliterating the spinal veins, in some places dense enough to cover completely the nerve roots and involving their sheaths.

The lumbar puncture on both occasions was "dry." The smears from the spinal exudate were negative; nothing grew on any of the ordinary media, and blood cultures were negative. Sections of the lungs showed the influenzal type of broncho-pneumonia, but Pfeiffer's bacillus was not isolated.

The writer does not remember ever having seen hæmorrhage in exactly the situation here described. It was probably responsible for the bilateral rigidity—a very variable feature in cerebro-spinal meningitis, but rarely so extreme or so tonic in character.—*Medical Review.*

The Mouth and Throat in Influenza.

A. Bloomfield and G. A. Harrop.—Early in the course of the epidemic the writer noticed an unusual bright red appearance of the throat in most of the patients. More careful study of subsequent cases showed this to have striking and constant features. The changes in the mouth usually become full-blown during the first 24 hours. The most striking feature is a bright vermillion or scarlet injection of the pharynx, tonsils, pillars and soft palate. In many cases, this erythema extends over the entire mouth. In the most marked cases the entire mouth cavity has a flaming appearance. On analysis this redness is seen to be due to a diffuse hyperemia of the mucous membrane, with an injection of minute blood vessels on the pharynx and pillars, but especially on the soft palate. There is a line of demarcation at the hard palate, which is relatively free. In some cases, especially the mild ones, these changes are less marked, being confined to the soft palate and pillars. There is extreme swelling of the lymphoid tissue of the posterior pharyngeal wall, which gives it a remarkable corrugated appearance.

The tongue is usually coated, but if clean is bright red like the buccal mucosa.

In from one-half to two-thirds of the cases at onset, one to three or four, or even more, dark, crimson spots were seen on the mucosa of the cheek. They were occasionally present on the gums, soft palate, mucous border of the lips, or on the uvula. These spots vary from a minute pin-point up to one mm. in diameter, and may be arranged in one or more clusters. The dark cherry colour and sharp margin characterise them and seem to indicate that they are hæmorrhagic. The individual spots fade rapidly, disappearing without trace in from one to two days. They may reappear in repeated crops, and are seen in convalescence in most of the cases. About 94 per cent. of the patients in whom they were systematically looked for showed them at some time during the disease. The writers had never observed such spots before, and were unable to find any account of them. They thought they might be specific of influenza as Koplik's spots are of measles. After the epidemic, however, it was possible to examine several hundred mouths of individuals who had had no symptoms of influenza, and in them also these spots were frequently present. In 393 examinations of 55 controls made daily over a period of one to nine days, the spots were seen 100 times, or in 36.6 per cent.

They were seen at some time in 84.2 per cent. of 38 controls examined daily over a period of a week or more. However, the spots were usually much smaller and less bright than in influenza. Although they are obvious and often picturesque in the latter, they are frequently so insignificant in the controls that they require careful search. Possibly the hyperemia of the mouth in influenza presents a specially favourable condition for their development. Their exact cause is uncertain; they may be due to slight trauma to the mucosa of the mouth. So that although these spots are not a specific lesion, their presence in typical form may have a certain degree of clinical specificity.

Another striking feature was swelling of the minute nodules normally present on the soft palate. They were often extremely prominent, appearing as white or grey glistening, rounded bodies, varying in size from 1 to 3 mm. in diameter. They were usually abundant, the entire soft palate being thickly seeded with them, and they stood out sharply against the surrounding hyperemia.

Although most writers have noted that the throat is injected, Tigri seems to be the only one who (in 1867) described a typical enanthem. He noted the peculiar injection of the soft palate, and likened it to the enanthem of measles.—*Medical Review.*

Alternating Attacks of Asthma and Eczema.

H. Kjerrulf.—In 1905 Feer noted that asthma and asthmatic bronchitis occur, as a rule, in children subject to eczema. This relation, which is not generally recognised, has been studied by the writer who, during the past 10 years, has observed 40 cases of asthma in children aged from 4 months to 13 years. In 19 of these there was also a history of eczema, and in 1 of urticaria and prurigo. Of the remaining 20 there were 10 cases in which the asthma was accompanied by fever and bronchitis, and 10 in which there was a family history of gout and rheumatism. v. Pirquet's reaction was positive in 5 cases but in no case could the asthma be ascribed to tuberculosis. In 8 cases adenoids and enlargement of the tonsils and cervical glands were demonstrable. The following case shows how asthma and eczema tend to alternate in the same patient.

An infant, born in the autumn of 1907, developed in the following spring severe eczema of the face, which was treated with a tar derivative. The eczema had almost disappeared by the autumn of the same year, when the writer was summoned one evening for a severe attack of asthma. After the attacks of asthma, which lasted about 8 days, the eczema again became worse.

Throughout this autumn and the following winter there were alternating attacks of asthma and eczema; and in Feb. 1909, severe rheumatic fever with polyarthritis set in. During each of the next 3 years the rheumatic fever recurred in Feb., and throughout this period there was no attack of either asthma or eczema. The rheumatic manifestations continued between 1915 and 1918, but there was no further attack of asthma till Oct. 1918, when it recurred with the onset of influenza. v. Pirquet's reaction was negative.

An infant, born in Dec., 1914, of healthy parents without a history of asthma, nervous disease, tuberculosis, gout or rheumatism, was at first exclusively breast-fed. At the age of 1 month, seborrhœic eczema of the face appeared and developed rapidly till the whole face was covered by a violently itching, weeping eczema. Colic and the mucous character of the green stools seemed to indicate overfeeding, but a reduction of the feeds though relieving the abdominal condition, did not affect the eczema, which also proved refractory to treatment with ointments. It spread gradually over the trunk and limbs, and in Jan. 1915, an attempt was made to change from human to cow's milk. This provoked severe vomiting, œdema of the lips and tongue, and general prostration.

In July 1915, the infant was admitted to hospital, where great redness and infiltration of the weeping, eczematous skin were noted. There was also considerable intertrigo. Respiration was snuffling, but the lungs seemed normal and, contrary to expectation, there was no albumin in the urine. An exudative diathesis was diagnosed, and 5 minutes baths at 42° were given thrice daily. The skin was treated partly with tar derivatives and partly with 0.5 per cent. resorcin compresses. Breast-feeding was supplemented by whortleberry tea and bouillon, given on alternate days. The eczema slowly diminished and when, by Aug. 23, it had practically disappeared, a severe and typical attack of asthma occurred. Under potassium iodide the asthma passed off slowly, and had disappeared in 14 days. With the cessation of the asthma, the eczema relapsed. In spite of the marked idiosyncrasy shown to cow's milk, it was gradually introduced into the dietary. Sometimes it was tolerated perfectly, at other times it provoked violent attacks of vomiting, with swelling of the eye-lids, lips and tongue, lacrymation, sneezing and spasmodic sibilant dyspnoea, which seemed almost to choke the patient. A violent attack of this description occurred on Oct. 10. In the afternoon of the following day the infant awoke with a severe attack of asthma, which threatened instant death. Much relief was afforded by taking the infant, who had been only breast-fed that day, out into fresh air. Potassium iodide was given and by Oct. 16 the asthma had passed off. At this stage the eczema was dry and was limited to the cheeks, forehead and legs. Both Wassermann's and v. Pirquet's reactions were negative.—*Medical Review.*

SURGERY.

Einhorn's Duodenum-Bucket.

BY

DR. T. NISHIKAWA.

The instrument was kindly sent to the writer by Prof. Einhorn of New York, the inventor, requesting the writer's opinion for it. The following is the writer's experience on a few cases of it.

It is made of gold, in size of capsule, No. 3, having shape of wine-barrel, and 0.8 gm. in weight, to obtain content of the duodenum. There are two holes on the upper edge of the bucket to be suspended by white silk-thread, of good strength, which is 35 inches in length, and, a short stick is at the other end to facilitate its attachment to night-gown.

The instrument, besides obtaining the content of the duodenum, is

- (1) To examine permeability of the pylorus;
- (2) To determine the presence and position of ulcers in the œsophagus, Pylorus, and duodenum.

The inventor has briefly described its use as follows.—After few hours of evening meal, the bucket may be swallowed with a glass of water, allowing the thread from 30 to 32 inches. The end of the thread is to be attached to the patient's dress by plaster. The bucket will pass the pylorus and reach the duodenum, while sleeping. On the next morning, pull the thread gradually with care. When the bucket reaches the larynx, some resistance will be felt which should not be overcome by force, but tell the patient to swallow, when the bucket will easily come out. Before removing bucket a knot must be made at the teeth in order to determine the length of thread in the digestive tract.

The patient should be cautioned not to take coffee, jelly, wine, and the like at supper, which stain the thread, because it is often mistaken for staining by ulcers.

When the bucket comes out of the mouth, examine the thread carefully, whether there is staining by blood or bile. The distance of the blood knots from the knot at the teeth will give the localization of the ulcer.

If the bucket passes the pyloric orifice, the thread end 4 to 8 inches will be stained yellow, as the average length from the incisor-tooth to the pylorus is 22 inches; and when the thread remains white not more than 22 inches, we might believe that the permeability of the pylorus is disturbed. In other words, if the pyloric orifice loses its permeability, the length of the cord 25 or 30 inches will remain white.

When the bucket reaches the duodenum, its content is usually of thick tenacious matter, slightly alkaline in reaction. It is sometimes acid and colorless matter, especially when the bucket is retained right behind the pylorus, and do not pass deep into the duodenum.

This examination will ascertain not only the situation of ulcer but also the prognosis of a case. In those cases in which perfect healing of the ulcer has taken place the test becomes negative.

For diagnosis of cancer of the stomach, the instrument may be of great use, when there is suspicion before any lump is detected, especially when the disease is located either in the cardiac or pyloric end. If the disease is located at the pyloric end, the bucket not permeable through the orifice is filled with brown liquid of offensive odor, and the thread is stained also brown (instead of staining yellow).

The above is the brief sketch of the inventor's statement for its use. According to the writer's experience in a few cases in course of 18 months, the bucket is not difficult to swallow (while the stomach bucket is). After swallowing it does not give discomfort nor feeling of foreign matter, but sleep well till morning. Few patients complained nausea by pulling the thread, but majority of them experience no difficulty but feel slight resistance at the larynx. It usually comes out easily by act of deglutition.

Although the inventor advises the examiner to pull the thread, the writer found that it seems easier to let the patient pull the thread by himself who manages to mitigate his discomfort (nausea, vomit, etc.)

From the incisor to the pylorus, for a length of 22 inches, the silk-thread soaked by mucous will present peculiar whiteness; when stained by blood, it becomes reddish brown and loses its glistening.

The part passed the pylorus and reached the duodenum, is stained yellow. One can tell at once by a glance the contrast of the glistening white of its upper part.

The contents of the bucket, as the inventor stated, is yellowish liquid, so thick that it cannot be emptied by itself. The majority were alkali and few were acid in reaction.

The second object for use of this instrument is to examine the permeability of the pyloric orifice. Formerly, it has been examined by using certain kind of food, such as dates used by Strauss, sea-weed by Belz, red-beans by Nagayo. The known quantity of such food was given at evening meal, and the stomach washed next morning. When there is stricture or impermeability of the orifice, the given food remains in the stomach. The method herewith introduced is far more convenient only to use the little bucket, size of capsule No. 3, and the object is easily attained.

The third object for its use is to ascertain the presence and position of ulcers in course of from the cesophagus to the duodenum. The latter (duodenum, stomach) has been ascertained by the concealed presence of blood in fæces, while the former (cesophagus) has been entirely depended on the subjective symptoms. The writer feels grateful indeed to state that by this method, it can ascertain not only the situation of ulcers, but also the effect of treatment.

The principal object of this instrument is to obtain the contents of the duodenum, but the bucket being small we can obtain only a small quantity so that we are only able to ascertain its color, tenacity, and chemical reaction. For more complete examination, the inventor's duodenum-pump is more practicable. But the method just described is so simple, and succeed two other objects at the same time, namely to ascertain the permeability of the pyloric orifice, and to detect presence and position of ulcers. The writer thinks it a very convenient, useful, and clinically important instrument, and recommends its use strongly.—*The Sei-I-Kwai Medical Journal*.

Painless Incision.

Soresi says that incision may be made painless by first dipping the scalpel into pure carbolic acid a few seconds before use. This will be the case even in incising deep tissues. It is the least dangerous method of anæsthesia, either local or general. Naturally it is the cheapest method, and in certain class of cases it promotes the complete cure of the pathologic condition. This statement requires some explanation. On account of the slight cauterization produced, wounds do not close as rapidly as when made with a bare instrument, but this is an advantage incising tissues the cut edges of which do not need to adhere immediately, as in opening pus-collections or infected tissues, but it should not be used when union by first intention and suture are needed. The scars produced by this method are not ugly; in fact, much less so than those resulting when drainage is required.—*American Journal of Surgery*.

THERAPEUTICS

Ichthyol in Whooping-Cough.

The following linctus was reported to the Societe de Therapeutique as being completely successful in whooping-cough:—

R Ichthyolis	...	...	...	...	...	3ss,
Glycerini	...	...	...	...	...	3i
Spiritus Menthæ Piperitæ	...	...	...	...	...	3i,
Olei Amygdalæ Volatilis	...	...	...	...	...	mv.
Syrupi	...	...	...	...	...	ad 3iv.
Misc. Fiat linctus.						

Not being toxic and giving rise, in the case of excess, to at most a little diarrhoea, the dose is not of very particular importance. The following are those usually used:—

Up to 1 year ... From 4 to 6 teaspoonfuls a day.
 " 2 years ... 3 to 4 dessert-spoonfuls a day.
 From 3 to 4 years ... 4 to 5 " "
 Five years and above ... 4 to 5 table-spoonfuls a day.

These doses can be increased and even doubled in obstinate cases. If given in the early stage of whooping-cough it is claimed that the attack is aborted and quickly evolved into a simple bronchitis. If the disease is well established intensive treatment is required for about 10 days.—*Practitioner.*

Some New Remedies for the Treatment of Chronic Cardiac Insufficiency.

Riebold points out the practical indications for the preparations known as digitale, digalene, extract of apocynum, calomel, camphor, iodine, and injections of strophantine. The possibility of injecting cardiac remedies into the tissues, or directly into the blood, makes a real step forward, as the drug is thereby placed in position to act quietly and effectually. In the case of digitale, doses equal to or greater than those given by the mouth can be used but, on the other hand, the greatest care must be taken in giving injections of strophantine, the dose of which should be ten times less. Hypodermic injections being painful, in consequence of the inflammatory infiltration set up, the injections must be made into the muscles or even into the veins in the case of digalene. The physician is very much better provided for now than formerly in the treatment of chronic insufficiency. Whereas there was but one drug at his service, digitalis, and that was liable to extremely variable results and often set up very serious gastro-intestinal disturbances, nowadays a large number of well-tested drugs are at his service, which yield good results in cases where formerly he was helpless. It is a great gain to have such drugs as strophanthus, apocynum, and the like at hand which are effective when digitalis fails. Finally, iodine and camphor can be of the utmost use when the heart no longer responds to preparations of digitalis.—*Practitioner.*

Treatment of Bronchial Asthma.

Goldschmidt finds that in serious cases of acute asthma the most certain results are obtained by the injection of morphia with 1 m.g. ($\frac{1}{4}$ gr.) of sulphate

of atropine. If the attack is still in the early stage it may often be cut short by giving theobromine preparation, especially by 30 grains of diruetine. The following prescription is particularly useful:—

R Caffeinae Valerianatis ... gr. iv.
 Theobrominae Sodii Salicylatis ... gr. viii.
 Misc. Fiat pulvis.

"One or two to be taken during the attack."

If the attack is due to bronchial catarrh iodine preparation are useful by promoting expectoration. The most suitable for use is the iodide of sodium. Iodipin brings on fits of coughing. Saiodine is easier to take than iodides. Goldschmidt has not found occasion to commend the use of atropine alone without morphia. Only a temporary effect is secured, and the patient is exposed to dangers.—*Practitioner.*

The Use of Stomach Tube (Siphon) Without A Funnel (Rubber or Glass).

BY

P. N. MAHALANOBIS.

Sub-Assistant Surgeon, Central Jail Hospital, Dacca.

During the year 1917 while working in the Dacca Central Jail Hospital I had to pass the stomach tube in a case of Chronic Gastritis. After passing the tube for about a month I was disgusted with constant pouring of water into the funnel, as I had to wash the stomach 4 or 5 times in each sitting daily and I had to spend one hour every day for that monotonous work, and it stuck me if there be any means to save time and trouble. It then came to my mind that if water can come out so quickly and easily from the stomach, it may as well pass into the stomach from outside by the same action (siphon action). The explanation of Siphon action is as follows:—

There are two vessels, one is stomach inside the body, another is a vessel full of water outside and a rubber tube full of water is connected from the outside vessel to the stomach; since the tube is full of water, water must evidently flow through it if the force which pushes it in one way is greater than that which pushes it the other way. Now the upward pressure of water at the vessel is equal to the atmospheric pressure minus downward pressure due to the water column inside the tube, consequently the upward

pressure at the vessel exceeds the downward pressure of the water column inside the tube; hence water will quickly pass from the vessel through the tube into the stomach and *vice versa*.

I commenced my experiment and came out successful within a week's time in finding out the means desired. The process which I adopted to bring my aim to a success is as follows:—

First take a long rubber tube with one end smooth (not less than 3 feet 5 inches in length) or take a Siphon tube without a funnel, then push it into the stomach and pour some water by a narrow stream from a small jug or from a measure glass very quickly, when the tube is full of water or a quick stream of water is passing through the tube into the stomach, then immerse the upper end of the tube promptly into a vessel full of water. The vessel of water must be kept in a place near the mouth of the patient above the level of the stomach of the patient. As soon as the tube is immersed into the vessel water will quickly run through the tube into the stomach. When sufficient water has entered into the stomach bring the upper end of the tube below the level of the stomach; water will begin to run out with the stomach contents through the tube. Both these processes may be repeated as many times as required.

Now one can at once ask what are the advantages of this process in washing out the stomach contents which in my humble opinion are as follow:—

- (1) It saves much time and trouble.
- (2) It does not require any assistant.
- (3) It does not require constant pouring of water into the funnel.
- (4) It saves money necessary for buying a glass funnel.
- (5) If the funnel is accidentally broken one can manage a case well, i.e., he will have no difficulty in washing out the stomach if this process is known to him.
- (6) In out of the way places or in village charitable dispensaries where Siphon tube with a funnel is not always available, the washing of the stomach can be performed by an ordinary long rubber tube and thereby many poisoning cases may be treated and saved.

I request my learned friends to give a trial to the process described above in their practice. I shall be glad to give them any further information that they may require.—*The Indian Medical Journal*.

Note on the use of Ionization in the Treatment of Certain Types of Facial Scars.

BY

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As a therapeutic measure in the treatment of facial scarring with its unpleasant consequences, ionization has hitherto received scant attention. The only reference in current literature which we have been able to find on the subject is a book by Hollande in which the author claims good results by the ionization of these scars with potassium iodide as his electrolyte.

We propose in this paper to demonstrate the results that we have obtained by ionic treatment of facial cicatrices consequent upon war injuries to the facial tissues, and especially where damage has been done to the masticatory muscles.

Perhaps the commonest disability arising from this type of injury is the condition of "false" trismus, manifested by deficient mandibular movement and inability to open the mouth properly. Hitherto such conditions have been treated by intermittent intra-oral gagging, and by massage of the scar area, with transient good results but a strong liability to recurrence. We have already noted elsewhere that this clinical condition is due commonly to one of three causes:

1. Fracture of the ascending ramus of the mandible, with actual damage to contiguous tissues.
2. In the absence of fracture, injuries of such a nature as to involve some fibres of the masseter, temporal, or pterygoid muscles, the scar tissue limiting movement.
3. Reflex spasm of all the masticatory muscles consequent upon organic injury of remoter parts.

In the more marked cases, as will be seen from the list recorded below, the degree of separation possible between the upper and lower incisor teeth may be as small as three millimetres.

We have found that the treatment of the scars by ionization results in a progressive decrease in their densities and an increased flexibility, both subjective and objective, with marked permanent improvement in ability to open the mouth and masticate. This has definitely occurred even when ionization has been unaccompanied by the use of intra-oral gagging or facial massage. Adherence of the scar to osseous tissue offers greater resistance, and the treatment has to be prolonged in these cases, often for a period of three months or more.

Method of Ionization.

We have used the alternating current from the city mains, which is run through a motor transformer so as to give a constant current of 100 volts E.M.F. This is conveyed to the patient through a distributing board, fitted with a wire resistance rheostat for the purpose of varying the strength of the current, and with a milliammeter for registering the amount of current used. The electrodes consist of small zinc plates about two inches square, between which and the skin we place from sixteen to twenty-four layers of folded lint. These coverings are about half an inch larger all round than the metallic electrodes, in order to prevent possible burns by contact of the metal with the skin. The pad of the negative or active electrode is soaked in the therapeutic agent (in our cases NaCl, KI, or sodium salicylate) in 1 or 2 per cent. solution in hot distilled water. The pad of the positive pole is soaked in hot water to which a trace of sodium chloride has been added to ensure easy passage of the current. The negative electrode is placed over the cicatricial area, whilst the positive electrode is placed under the chin (most often) or over the deltoid or on the nape of the neck. These are made secure by bandages which also ensure efficient contact with the skin area to be treated. The current is turned on very slowly, and we start with a current of 2 to 3 milliamperes, gradually working up, according to the patient's tolerance, to 15 or 20 milliamperes. The maximum current which each patient can support comfortably varies, and is usually not reached until the third or fourth treatment.

By this gradual method we have been able to obviate the unpleasant after-effects of headache, vertigo, and nystagmus, which are liable to occur from the passage of an electric current so near to the semi-circular canals and their endolymph system. The duration of each treatment is from thirty to fifty minutes, daily when the condition of the skin permits and on alternate days when the skin is sensitive. It is useless to attempt ionization when oral sepsis is present, or, at any rate, until it is under control; also it should not be used while metallic foreign bodies exist in the tissues, otherwise burns are liable to occur, with the formation of slowly healing ulcers.

In the event of an abraded surface happening to be in the area under treatment, it is sealed with a drop of collodion which is allowed to dry before proceeding. If a small indolent sinus persists, it is plugged with gauze soaked in the electrolyte used and usually heals early in the treatment.

At the end of each treatment the current is always gradually reduced before withdrawal to avoid unpleasant subjective shock to the patient. It should be remembered that the ionic effect is directly proportional to the intensity of the current and the time of application, so that as large a current as can be comfortably borne should be used, and the treatment should be of a long rather than short duration.

Mode of Action.

Ionization with sodium chloride as an electrolyte has given us the best results; ionization with iodides is more apt to cause irritation of the skin, but is useful, as is ionization with sodium salicylate, in the alleviation of painful conditions. As far as softening the scar is concerned, the latter two drugs are less effective, in our opinion, than sodium chlorate (chlorine ions).

It is said that the liberation by secondary reaction at the cathode of the hydroxyl ion, which like the hydrogen ion is one of high velocity, may contribute to the resultant effects, and we can confirm that the results obtained with the negative pole as the active electrode are greater than those obtained with the positive. There seems to be no doubt, however, that a considerable portion of the resultant good effects, is due to the condition of induced hyperæmia which persists for an hour or two after the cessation of treatment. It would seem highly improbable that the ions penetrating the tissues, or formed in the tissues by the passage of the current, retain their ionic or active state locally for more than a fraction of time, but that they immediately enter the general circulation in combination as inert substances. It has been stated that ions are introduced into the endocellular plasma and not into the general circulation, but we fail to see why such a permeable membrane as the cell wall should act as a confining barrier to the highly active ion, or why the cell plasma, which is isotonic with the surrounding exocellular plasma, should exercise any chemiotatic effect upon the ion. Hence any benefit due to introduction of ions or to ionic dissociation in the tissues, must be limited to the time of passage of the current and to the period of active bombardment during the actual treatment.

From the above notes we may conclude that ionization in the treatment of facial cicatrices is of undoubted value. The circulation through the scar tends to become re-established; there is loss of stiffness and adherence, permitting the play of underlying muscles and reduction of the limiting effect of the scar upon the masticatory muscles. It is a therapeutic measure which we think may be with advantage combined with the mechanical procedures of intermittent intra-oral gagging and massage. We find the results best when the gag is applied for an hour immediately before treatment. In cold weather it is a good thing to thoroughly warm the area to be treated with hot water, or by the use of radiant heat by means of a small cup reflector for fifteen minutes before commencing ionization.

In cases also where the edges of the flaps, after facial plastic operations, are rolled and thickened, causing retraction of surrounding normal tissue, we have found ionization of use in increasing the softness and flexibility, and so in diminishing the deformative effects of such scars—*British Medical Journal*.

THE ANTISEPTIC

SEPTEMBER, 1919.

Re-organisation of Medical Services in India.

EARLY in the current year the Committee appointed by the Government of India to enquire into the condition of medical services in this country visited the important cities, enquired witnesses and submitted its report and recommendations. But the rather peculiar feature of the proceedings of the Committee is that the enquiry was all in camera, the press and the public alike having been kept out. We are therefore in the dark about the recommendations of the Committee, but from the studied secrecy with which such an important matter has been rushed through we may surmise that the recommendations must have been mostly adverse to Indian aspirations. We are told, subject to correction, that the Committee has opined that men with purely indigenous qualifications will not do for the higher grades of the service and that to ensure the efficiency of the department men with British qualifications should alone be recruited for the superior service. If so, we cannot imagine a more grievous injustice to the large body of medical men trained in India, and we emphatically protest against those recommendations.

From an article which has appeared in *The Statesman* of the 5th September on the subject of "Temporary Commissions in the I. M. S." we find that one Sir Henry Burdett has openly condemned the men holding temporary commissions in the I. M. S. as quite unqualified 'in the English sense' and incapable of working "even as assistants to panel doctors in England." We do not know who and what this modern Daniel is that has come to judge the hundreds of Indian medical graduates, a large number of whom have graduated in England. Evidently this Daniel is either blissfully ignorant of the conditions of medical education in India or so far enchanted by the white complexion of his own countrymen as to break the bonds of truth and fairplay. Does this English Knight, who has metamorphosed himself into a modern Daniel, know that instances are not wanting of Indian medical students

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who having failed in the local L.M.S. or M.B.B.S. examination straight way proceeded to the United Kingdom and there passed the examination within three months and came out successful in the I. M. S. competitions? Does this not show that the course of medical education in this country is in no way inferior to that in Britain? Does this gallant Knight know that during the most trying period of the late great war, when the bulk of the I. M. S. Officers had been drafted away for war service, it was the Indians who filled all the responsible posts in the department, such as D. M. & S. Os, Physicians and Surgeons of the General Hospitals, &c., and that these Indian substitutes admittedly acquitted themselves remarkably well, even better than the I. M. S. Officers in some cases? The late war has conclusively established that the Indian medical men are quite capable of not only managing but also managing efficiently even the biggest and most important hospitals in the country. We cannot imagine how in the face of these patent truths Sir Henry Burdett and probably also the Medical Services Re-organisation Committee could possibly have made recommendations in wholesale condemnation of indigenous talents.

We are told that the I. C. S. members of the Government of India are not quite in favour of these recommendations, but we seriously doubt whether they will stick to their views till the end and whether they will not ultimately yield to the persuasions of the I. M. S. and the R. A. M. C. Our hopes therefore lie in a loyal and constitutional agitation for better recognition and more equitable treatment. With the exception of a few protest meetings, probably one in Bombay, one in Bengal and one in Madras, we have not heard or read of any sustained agitation from those who are vitally interested in the matter. It is rather unfortunate that most of these medical men are in official harness and cannot give adequate expression to their grievances, especially because fear of official wrath ties their tongue and paralyses their pen. The private practitioners on the other hand are solely concerned with their own work and rarely give any thought to the subject because it does not directly concern them. But these should however remember that they owe a duty to the country, to the rising generation and to posterity, and in the conscientious discharge of these duties lies their sense of civic and social obligations. It therefore behoves them to take up the cause of their half-mute brethren in the profession, nay the cause of posterity, and see that the wrongs sought to be inflicted are removed before they actually become irremovable. For this purpose the private practitioners of all grades should form themselves into an association to be called, say "The Independent Medical Practitioners' Association" and take upon themselves the noble task of safeguarding and promoting the interests of indigenous talents.

As stated above the thick veil of secrecy hanging over the doings of the Committee has given rise to all sorts of unpleasant rumours, of which the most damaging is the one we have now dealt with. We have however no reason to despond, because we have still faith in the fair-mindedness of Englishmen like our Secretary of State Mr. Montagu, who cannot be so easily influenced by interested and prejudiced representations. We are sure that the Committee's report will sooner or later be published in India and Indian views called for and duly considered before it is finally adopted and given effect to. In the meantime we hope that the distinguished Indian members of the various deputations now in England in connection with the Reform Scheme will take up the matter and do all they can by way of spade work, so that in the fulness of time when the matter comes to be referred back to this country we may follow up the agitation and work out the salvation of indigenous talents.

ACKNOWLEDGMENTS.

We acknowledge with thanks, receipt of the following Journals:—

The Bristol Medico Chirurgical Journal. The American Journal of Clinical Medicine. The Good Health. The Indian Medical Gazette. The Practical Medicine. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. The Canadian Medical Association Journal. The Calcutta Medical Journal.

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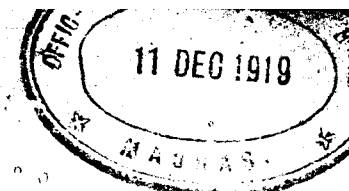
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Advertisement Rates per page per month Rs. 7-8 or 10s.,

Half page Rs. 4-8 or 6s. a month.

The subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.



THE ANTISEPTIC.

Vol. XVI.]

OCTOBER 1919.

No. 10.
Annual Subscription Rs. 5

Original Articles.

* CATARACT.

BY

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WE all know that the lens is a colourless transparent body biconvex in shape, with a refractive index of about 10 dioptries. In children and young adults, the lens fibres are of the same consistency and density throughout and no nucleus is present. As age advances, the colour gets yellowish, the texture gets firmer, the refractive power and elasticity diminished and size increased. At about 30, the more central portion becomes compressed and sclerosed, forming the nucleus. It is this sclerosis that divides cataracts, clinically, into hard and soft, and the diminution in the elasticity of the fibres helps to diminish the accommodation power with advance of age.

Nucleus and Cortex.—If after removing the capsule, we try to crush the lens of an elderly person between the fingers, the softer peripheral masses separate, while the harder central portion remains uncrushed between the fingers. The former forms the cortex, the latter the nucleus of the lens. The cortex is colourless, the nucleus has a yellowish or brownish hue. It is not until the age of 25 that distinct although still small nucleus is present. At about 30 years of age the more central portion becomes compressed and sclerosed, forming the nucleus.

Cataract is an opaque condition of the crystalline lens, due to structural changes of its component fibres. The opacity varies in the portion of the lens.

* Specially contributed to the *Antiseptic*.

that is first affected, in its rate of progress, in time of life at which it occurs in its colour and consistency and in its causes, consequently it is difficult to construct a good classification.

The ancients thought that the opacity which they depressed into the vitreous, was situated in front of the lens. They believed that it originated from the pouring out of an opaque liquid which fell down from above, hence the synonym waterfall. In 1705, Brissieu, a French Surgeon, had the opportunity of performing an autopsy upon the body of a soldier, who had a mature cataract in his eye. He performed depression of the cataract on the cadavre and then opened the eye, when he found that the opacity which he depressed into the vitreous was the lens. He laid his observations before the French Academy. It was not till 3 years later, when new proofs had been brought that the Academy recognised the new doctrine, which soon found general acceptance.

Different forms of Cataracts.

1. **NUCLEAR.**—The opacity commences in the central portion of the lens and gradually shades off towards periphery. It mostly occurs between 40 and 50. It may come on at any age.

2. **CORTICAL CATARACT.**—It commences on both surfaces of the lens. It is of frequent occurrence in old people and is rarely seen before 40.

3. **PERINUCLEAR.**—Zonular or Lamellar Cataract. Here the central and peripheral portions are unaffected but a shell-like opacity exists between the centre and surface of lens. This cataract remains stationary, occasionally it extends gradually and involves the whole lens. This form of cataract generally comes on a few months after birth. As the opacity is not sufficiently dense to be conspicuous, the condition is not diagnosed until the child learns to read. In some it is congenital probably due to syphilis. In others, it is the result of rickets, the latter being a disorder of nutrition which, besides affecting the bones, affects the structures as the teeth and the lens. The lens which in its development has much in common with the teeth, is also supposed to undergo some disorder during a period of its development while, later, after the disappearance of the disorder, normal transparent layers of lens substance are again deposited. All gradations between almost normal sight and considerable impairment of vision are noticed.

4. **ANTERIOR POLAR CATARACT** or pyramidal cataract consists in a dense, chalky white, circular patch of opacity at the anterior pole of the lens, on and beneath its capsule. The opacity only extends a short distance into the lens substance. This condition is sometimes congenital, probably due to intra-uterine iritis or the presence of capsulo-pupillary membrane, on the front of the lens, more often it is the result of an attack

of ophthalmia neonatorum, which has caused a central perforating ulcer of cornea. In such cases, a central opacity of cornea can usually be seen by focal illumination. This cataract is always stationary and does not call for treatment, as the vision is not generally affected.

5. **POSTERIOR POLAR CATARACT.**—The opacity is situated on the posterior pole of the lens or its capsule. The opacity is usually small, round and white, very often star-shaped, as Colonel Elliot used to call it. This may be congenital or acquired. The congenital form is generally connected with imperfect absorption of the foetal hyaloid artery hence there is no opacity of the lens or capsule. The acquired form is said to be progressive and secondary to pigmentary degeneration of retina or inflammatory changes in choroid or ciliary body. I have seen a few cases where the vision was only 6/36 in each eye with no improvement with spheres but with no changes in the fundus whatever. The opacity was bilateral in each case. Treatment:—
• Leave the cataract alone.

6. **CORTICO-NUCLEAR CATARACT.**—In which the opacity occurs in both cortex and nucleus.

7. **CAPSULO-LENTICULAR.**—Opacity occurs in the lens and the capsule.

8. **CONGENITAL CATARACT.**—This is rare and is always seen as a complete one. It is a bilateral form. It is associated with defects in retina and choroid. Operations are not satisfactory. If not treated early, nystagmus develops. Some cases are seen with nystagmus.

9. **INFANTILE CATARACT.**—This the complete cataract of young people. The pathogenesis is unknown.

10. **BLACK CATARACT.**—The actual cause is unknown. It is associated with gout, albuminuria, arterial degeneration, sclerosis, diabetes. The name is sometimes given to cases of extreme sclerosis of the lens in which it assumes a dark brown colour. But in other cases, lens is really black, the pigment being derived from the blood. The prognosis for the operation is not good, as it is often complicated with diseases of the choroid, or hæmorrhages in the vitreous humour. Some cases have got on well with restoration of vision.

11. **TRAUMATIC CATARACT.**—This follows as a rule, perforating wound of the lens-capsule and may then be complicated with a foreign body, but a form of concussion cataract results from non-perforating blows of the eye in consequence of the rupture of the capsule at the equator. The lens by imbibition of the aqueous becomes opaque at the seat of the injury and tends to swell. Soft, whitish flakes of lens substance protrude through the rent in the capsule and fall into the anterior chamber. The foreign body

may be glass piece, or thorn, stone, stick, etc., or metal, as iron, silver-wire, etc. In young patients spontaneous cure of the cataract may result.

12. **ANTERIOR AND POSTERIOR CORTICAL CATARACT.**—These are associated with choroiditis, retinitis pigmentosa and fluid vitreous. They afford a bad prognosis for the operation, on account of its being complicated with lesion of the fundus.

13. **SECONDARY CATARACT OR CATARACTA COMPLICATA.**—These occur as a result of other diseases of the eye-ball as cyclitis, iritis, choroiditis, myopia of high degree, retinitis pigmentosa, detachment of retina, glaucoma, intra-ocular tumour. The cataract often by its peculiar appearance shows that it is complicated. It is distinguished by being liquified, or calcified, by the thickening of its capsule, by the presence of a yellow or green discolouration, by the tremulousness of the lens. In fact many complicated cataracts cannot be operated on at all.

Cataracts are classed as hard and soft. The distinction has a practical importance, as the two classes are amenable to different modes of treatment. The soft, if broken up, are readily dissolved by the aqueous and can be absorbed, while it is impossible to extract the lens *en masse*. The hard cataract when broken up imbibes the aqueous however and undergo much swelling but show little tendency to be absorbed and when they have reached a certain stage of maturity, they can be shelled out entire from the capsule. Cataracts may be taken as soft, when they occur before 25 or 30 years and hard after that age. A hard cataract, after reaching its full development may undergo pathological softening, beginning with the cortical portion of the lens, which becomes more or less milky in appearance, the nucleus retaining its consistency floats in the opaque fluid or is seen gravitating to the lowest part of the capsule. This is known as morgagnian cataract. In some hypermature cataracts the cortical substance dries up and finally comes to form with the nucleus a hard flat disc. This is known as shrivelled cataract. In some hypermature cataracts, the changes occur in the epithelium lining the inner surface of the anterior capsule, which results in the thickening of the capsule. So there is great difficulty in lacerating the capsule during operation. In old standing hypermature cataracts, lime salts are deposited. Calcification results.

These are obscure Causes.

The opacity appears to be due to an atrophic granular degeneration of the lens fibres, probably the result of defective nutrition. Sometimes there is no perceptible, local, or general cause.

1. **SENILITY.**—In many cases the disease appears to be due to decline of vitality from age, anxiety or dissipated habits.

2. **DIABETES**—about 6 % of diabetic patients is said to suffer from cataract.

3. Local disease of iris, choroid, or ciliary body, as in secondary cataract of glaucoma.

4. Injury by blow on the globe rupturing the capsule or resulting in entire or partial dislocation of lens; by sharp instruments, or foreign body. Opacity may follow a perforation caused by corneal ulcer by imbibition of morbid fluid.

5. Inherited syphilis.

6. Glass blowers cataract. Here it is due to the great heat, to which their eyes are exposed, or to the congestion in the blood supply of the uvea, caused by the repeated act of blowing.

Symptoms and Diagnosis.

Gradual failure of distant vision and inability to get suitable glasses are the first symptoms complained of. The dimness of vision is as if looking through a mist, or curtain. Large opacities disturb the sight to considerable degree and moreover alarm the patient by the production of peculiar phenomena, such as muscae volitantes and polyopia. Muscae volitantes consists in the patients noticing black specks in the field of vision. Multiple vision, or polyopia-monocularis, causes the vision to see the same objects double and multiple. The reason for the polyopia is found in the optical irregularities which develop in the lens, as it grows opaque. This is known as irregular lenticular astigmatism, so that the lens throws upon the retina, not one but several images of the same object. Diminution in visual acuity depends, with regards to its degree, upon various circumstances. It is greater when the opacity is diffused, less when it is sharply circumscribed, so that quite clear interspaces are found between very opaque spots. The interference with vision is also greater when the opacity is situated in the central portion of the lens than when it occupies the periphery. In the latter case, i.e., in the cortical, the sight may be normal, as long as the opacities continue to be behind the iris. In the early stage of those forms of cataract, where the opacity commences within the central portion of the lens, i.e., the nuclear cataract, the patient can see better, when placed in any condition that favours dilatation of the pupil. He prefers a dull day or twilight or evening, the vision is improved by standing with his back to light. Distant vision will be better after use of atropine or homatropine drops. The reverse condition occurs when the opacities occupy the periphery of the lens. Vision is better when the pupil is contracted, so that the opacities are covered by the iris. Such patients try to get a bright light and see better by day than by night.

Myopia often develops in the beginning of senile cataracts. In this case, we are dealing with elderly people, who formerly saw well at a distance and used convex glasses for reading and who then began to notice that they could read fine print again without glasses, and are very much pleased

stomach, the exact site of origin and disappearance and the direction of the wave of contraction being noted.

If peristalsis is resulting from small intestine obstruction, it will be of the type spoken of as the ladder-rung variety, whereas if it is due to large intestine obstruction the peristalsis will be vertical in direction.

The presence of scars and their situation should be carefully noted. In cases of intestinal obstruction it is of great importance not to overlook scars in the skin, and to inquire as to their origin, as adhesions beneath the skin-scar or in the neighbourhood of the organs involved at a previous operation may be the cause of the trouble.

Again, it must never be forgotten in cases of intestinal obstruction how important it is to examine all points where hernia may be found.

Percussion is next performed, the area of liver dulness noted, whether it be normal, increased, diminished or absent. The fact that liver dulness is present does not of necessity exclude the diagnosis of perforation of the stomach or duodenum. Total disappearance of liver dulness in such a case must depend on (1) the length of time that has elapsed since the perforation took place, (2) on the size of the original opening, and (3) upon the nature of that which first tries to escape from the opening.

I was once asked by the late Professor J. Michell Clarke to operate upon a young woman whose stomach had perforated half an hour before he saw her and made the diagnosis; liver dulness was not diminished at all. At the operation, which was done within two hours of the occurrence of perforation, a piece of onion was blocking completely the orifice in the anterior wall of the stomach.

Crossing to the left of the middle line the splenic area is percussed; both renal and iliac regions and the hypogastric region should be examined in the same way, noting any evidence of unusual dulness, and if necessary the patient should be rolled over on to the side to ascertain the presence or absence of shifting dulness. It is seldom worth while to waste time by trying to map out the outline of the stomach by percussion; our ideas of its size and shape as mapped out by the combined methods of percussion and auscultation have been proved to be quite erroneous by the more accurate and scientific examination with the Röntgen Rays and the fluoroscope, after the ingestion of a bismuth or barium meal. If there is any tumour in the epigastric region it should be noted whether it is dull or resonant on percussion.

Auscultation is of very little value in examining the abdomen. Occasionally it is useful in determining the presence of a patch of peritonitis or of locating the position of a stricture or narrowing of the bowel lumen.

The most important examination after inspection is that of palpation, and I do not think any of us live long enough to become as proficient in this form of examination as might be possible if we could continue with unflagging energy and intelligence beyond the time limit set by hospital authorities and the Almighty.

As in the examination of the female breast, so also in palpating the abdomen, it is possible to obtain the maximum of information by using the flat hand or the palmar aspects of the phalanges rather than the actual tips of the fingers. By use of the latter in any case suffering from an acute abdomen an unnecessary amount of pain is inflicted, and the examination is rendered more difficult therefore, as anything increasing pain will of necessity increase rigidity of the muscles. One of the most difficult things I know is to get the patient at times so to relax the abdominal wall as to allow of a thorough palpation being carried out; in an acute abdomen with perforation of any portion of the intestinal tract this is quite impossible. Within a few moments of perforation taking place the abdominal wall becomes board-like and scaphoid in shape, later becoming distended by slow degrees. These symptoms are of so grave a nature that the surgeon should be asked to see the case immediately.

I always palpate the regions of the abdomen in order, commencing in the right hypochondrium, travelling across to the left, then coming back to the right side, examining in transit the left renal, umbilical and right renal regions, then from right to left again in the order right iliac, hypogastric and finally left iliac.

By this systematic method or palpation one is able to decide whether any particular region is more resistant than others, or whether guarding contraction of the muscles follows on examination in any one or more regions. The hand next grasps the loins in turn, the right hand is placed with the fingers over the right side of the abdominal wall and the thumb in the interval between the last rib and the crest of the ilium. When the patient takes a deep inspiration and forces the diaphragm down the hand may grasp a tumour, or a misplaced or enlarged viscus or portion of a viscus. Passing round to the other side of the bed or couch, the same examination is carried out on the left side, the left hand being used in exactly the same manner as was the right hand on the right side. Where it is not possible easily to pass to the other side of the bed, the left side can be examined by placing the right thumb over the left abdominal wall and the fingers in the loin.

In connection with examination by palpation, I must refer to the presence of hyperalgesia in abdominal disease, and say a few words of its importance in helping us to arrive at a correct diagnosis. An article appeared in *The Practitioner* of August 1916, by David Ligat, giving the result of his investigations, conducted on the lines laid down by Sir James Mackenzie

in *Symptoms and their Interpretation*. He considers that "all the pain that a patient complains of, and the tenderness that an observer can elicit, would seem to be due to a true *viscero-sensory reflex*, and not in any way to pain or tenderness felt in the organ itself. Various methods of eliciting reflex responses were tried by Ligat; that which he found to yield definite and demonstrative results he describes as follows; "Grasp the skin and subcutaneous tissue firmly between finger and thumb, and draw them away from the deeper layers of the abdominal wall. If an hyperalgesic area be present the patient winces, and one can tell by the patient's expression when such an area is being stimulated."

After long and careful observation Ligat was forced to the conclusion that these points corresponded anatomically with the subcutaneous distribution of certain branches of particular nerves. The amount of pain in different cases varies very considerably. Where there is general evidence of acute inflammation of a viscus the pain produced by pinching up the skin may be elicited over a large area of skin, corresponding perhaps to two, or even three spinal segments, but by carefully mapping out the point of maximum hyperalgesia the actual organ effected can generally be decided upon. In other cases where there is no evidence of acute inflammation and vague abdominal pain is the chief complaint, very careful examination is necessary, closely watching the alteration produced in the patient's facial expression when the skin is pinched up. It is in this type of case that I have myself found the greatest amount of assistance from this method of examination. The sensation produced is not always described by the patient as one of actual pain, it is frequently described as "pricking," "curious," different from a similar pinch on the other side." This diagram copied from Ligat's paper gives a good idea of the different areas affected in different viscera. In all cases where I have to examine an abdomen I invariably test these areas for hyperalgesia.

There are three so-called "signs" recognised in connection with abdominal palpation associated with the name of those who first pointed out their value. They are:—

1. *The McBurney Sign*.—I quote from Kelly's monograph on *The Vermiform Appendix and its Diseases*, "As to the location of the pain as a significant factor in making a diagnosis of 'appendicitis,' the value of the 'McBurney point' is now so universally known that it is most interesting to read the first statements of the author relative to the matter. 'The exact locality, of the greatest sensitiveness had seemed to me,' he says, 'to be usually one of importance. Whatever may be the position of the healthy appendices found in the dead house—and I am aware that its position when inflamed varies greatly—I have found in all my operations that it lay, either thickened, shortened or adherent, very close to its point of attachment to the

cæcum. This, of course, must in early stages of the disease determine the seat of greatest pain on pressure. And I believe that in every case the seat of greatest pain, determined by the pressure of one finger, has been very exactly between an inch and a half and two inches from the anterior spinous process of the ilium on a straight line drawn from that process to the umbilicus. This may appear to be an affectation of accuracy, but so far as experience goes the observation is correct."

2. *Murphy's Sign*.—Murphy wrote (in the *Medical News*, vol. i., 1903 p. 825): "The most characteristic and constant sign of gall-bladder hypersensitiveness is the inability of the patient to take a full inspiration when the physician's fingers are hooked up deep beneath the right costal arch below the hepatic margin. The diaphragm forces the liver down until the sensitive gall-bladder reaches the examining fingers, when the inspiration suddenly ceases as if it had been shut off. I have never found this sign absent in a case of calculus or in infectious cases of gall-bladder or duct disease." This last statement I can repeat as the result of observation in all cases of this kind that I have examined since I read his paper in 1903.

2. *Boas's Sign*.—Boas writes (*Munch. med. Woch.*, April 15th, 1903, p. 604): "Least recognised as a symptom of cholelithiasis is tenderness over the posterior surface of the liver. When well marked it extends laterally from about an inch external to the spines of the vertebrae to the posterior axillary line, and vertically from the eleventh dorsal to the first lumbar spines. To demonstrate it the finger should be pressed against a point to the right side of the tenth dorsal spine; then against successive points in lines running horizontally outwards, opposite the other spinous processes, down to the first lumbar spine, first on one side then on the other. This symptom, if present during the acute attack, is also invariably present in the intervals; that is, if once present it is always present, and is therefore of special diagnostic value in the later stages. Occasionally it may be found years after the last attack of colic. Conversely, if absent in the acute attack, it is not found in the intervals. It is usually sufficient to map out the areas of tenderness with the finger, but when there is a doubt as to whether the right side is the more tender, greater accuracy may be obtained with the faradic or galvanic current. When, as often occurs, the lower edges of the liver and the gall-bladder are not tender, the discovery of the second or third areas of tenderness may, in conjunction with other symptoms, often decide the diagnosis. The presence of one or more of these areas indicates also that though no attack of colic may have occurred for some time the patient still requires supervision and treatment."

Commenting on this sign, Sir Berkeley Moynihan says (*Gall-stones and their Surgical Treatment*, page 117): "I consider the search for the

tender area a necessary part of the examination of all patients who suffer from gall-stone diseases, or in whom the existence of this disease is suspected. It is undoubtedly a sign of great value." I have myself used this sign in all cases of suspected gall-stone disease that I have examined since the end of 1914, and have only found gall-stones present in two cases where I had not proved the presence of the tender areas. In association with the presence of hyperalgesia in the gall-bladder area, this sign is of the greatest possible value in helping us to arrive at a correct diagnosis in those cases where a difficulty exists in determining whether we are dealing with appendicitis or gall-stones or a tumour in the right side of the abdomen. I have not found this sign present in a fair number of cases of malignant disease of the gall-bladder in which gall-stones were not demonstrated at operation.

I have noticed that in cases of adhesion of the gall-bladder involving the pylorus or the duodenum and in cases of pyloric ulcer whether on the duodenal or gastric side of the pylorus, an area of tenderness similar to that obtained in Boas's sign is to be elicited over a corresponding area between the seventh and tenth thoracic spines vertically. This corresponds to the area of distribution of the cutaneous branches of the posterior divisions of the sixth, seventh and eighth thoracic spinal nerves. The area over which the sign described by Boas is obtained corresponds to the distribution of the cutaneous branches of the posterior divisions of the ninth and tenth nerves. If investigation is further pursued on these lines, we shall possibly find that there is a definite area of hyperalgesia obtained for diseases of the larynx, pharynx and œsophagus.

I should like here briefly to recite the notes of four cases which illustrate what I have just said about hyperalgesia, Boas's and Murphy's signs. They are as follows:—

Case 1.—Mrs. M., æt. 35, wife of a doctor, seen July 8th, 1916, at 8-30 p. m. Taken ill suddenly at 11-30 last night, with severe pain in the back; 6 a.m. vomiting and repeated vomiting until 9 a.m. Has had two or three similar but less severe attacks every year for the last three or four years. Her father died at age of 74 of carcinoma of the liver, her mother at the age of 54 of cancer of the pancreas. In the right renal region is a sausage-shaped tumour, quite hard and nodular, which passes up and disappears into the hepatic region. It comes down on deep inspiration. There is no area of resonance between the tumour and the liver edge. Gall-bladder hyperalgesia, Murphy's and Boas's signs are all present and very well marked. Eleven days later the gall-bladder was opened and drained, a large number of stones having been evacuated. The swelling had previously been diagnosed as a cancerous tumour of the ascending colon, on account of the hardness and of the situation.

Case 2.—Mrs. S., æt. 52, seen September 15th, 1916. There was a history of gall-stone colic followed by jaundice eight years ago and again last Christmas. Hyperalgesia was absent, but Boas's and Murphy's signs were both present and well marked. In the right hypochondrium, one inch to the right of the middle line, and half-way between the umbilicus and the ensiform cartilage, deep pressure always produced marked wincing; it is interesting to note that tenderness in that spot is frequently found in association with duodenal ulcer. She was operated on September 24th. Between the time of my first seeing her and of the operation she had passed two gall-stones. The gall-bladder was found adherent to the anterior abdominal wall, the transverse colon and the second portion of the duodenum. A fistula was existing between the gall-bladder and the duodenum, this accounted for the point of tenderness mentioned above. The gall-bladder and cystic duct were removed with stone *in situ*, the stones in the bladder and cystic duct were white and pearl-like in appearance.

Case 3.—Mrs. W. W. P., æt. 61, seen November 30th, 1916. Seven years ago had an attack of indigestion with pains in the upper abdomen, has had numerous attacks of niggling pain since. Some months ago found a difficulty in sitting forward, as some thing hard got in the way. A tumour was found by the medical attendant in the right side of the abdomen, which was not connected with the pelvis, and was thought to be a malignant growth in connection with the ascending colon. The bowel for the last thirty years has been relieved twice daily, and the motion has always been of a fluid consistency; there have never been any blood or mucus in the stool, and she has never been constipated. There is a large sausage-shaped tumour coming down from under the lower border of the right lobe of the liver, which comes down farther on taking a deep inspiration. There is no resonance between the tumour and the liver edge, no impulse into the loin, and no dilatation of the cæcum. No Boas's or Murphy's sign and no hyperalgesia present. A diagnosis of impaction of a gall-stone in the cystic duct hydrocele of the gall-bladder was made. The abdomen was opened on December 3rd, when a large distended gall-bladder partially covered by a Riedel's lobe was delivered, on raising which a stone was seen impacted in the cystic. The cystic duct was clamped and ligatured, and was removed with the gall-bladder *in situ*.

Case 4.—Mrs. C., æt. 56, seen January 20th, 1917. For some considerable time past has suffered from heart attacks; this had ceased for a time, but returned three weeks ago. She has had no vomiting, no diarrhoea, and no constipation. There is a tumour in the right hypochondrium extending from the rib margin to a point one inch below and immediately to the right of the umbilicus, the lower end of the tumour is stony hard and rounded. The edge of the liver can be felt on each side of the tumour, and is much lower

than normal; indeed, that part of the right lobe which is external to the tumour almost reaches the iliac crest. There is no area of resonance between the tumour and the liver; there is no impulse into the loin and no dilatation of the cæcum. Boas's and Murphy's signs are both absent, but gall-bladder hyperalgesia is well marked. The diagnosis made was occlusion of the biliary duct by a stone, with probably a large stone at the distal end of a much distended gall-bladder. At the operation performed by the medical attendant on January 21st the condition found was exactly as described.

In almost all cases of abdominal disease it is a wise rule to examine the rectum as a routine procedure; in cases where the patient complains of suffering from piles or from hæmorrhage from the anus, or of frequent diarrhoea or constipation or of the passage of mucus with the fæces, it is in my opinion criminal to neglect to carry out such an examination.

The presence or absence of a tumour in the pelvis should always be noted. I vividly recall one case some few years ago of a woman who was suffering from extremely obstinate constipation. I was asked to see the case with a view to remove the colon, another surgeon having stated that it was eminently a suitable case for that method of surgical treatment. I was supplied with a copy of very elaborate notes, but on going through them very carefully before examining the patient was struck with the fact that no mention was made of any rectal examination having been made. I made a careful examination of the abdomen and then of the rectum; the latter was absolutely blocked by a large, tender swelling in Douglas's pouch, which was diagnosed as, and at a subsequent operation proved to be, adherent and inflamed ovarian cyst removal of which absolutely cured the constipation.

Other methods of examination are also necessary in arriving at a correct diagnosis. We have before us usually an analysis of the urine in any case for investigation, whether abdominal or not. A blood count is sometimes helpful, as in distinguishing between Banti's disease and splenic leucæmia. It is useful sometimes also in cases where it has been difficult to decide whether suppuration has occurred, though it must never be forgotten that leucocytosis is by no means pathognomonic of suppuration.

Lastly, we have the more modern method of examination of the intestinal tract by means of a fluoroscope after the ingestion of a meal which is opaque to the passage of Röntgen Rays. This method of investigation is of the greatest possible value in coming to a correct diagnosis in chronic abdominal conditions; but it is readily seen that it can be of very little assistance, if any, in that group of abdominal conditions which is now so generally spoken of as the acute abdomen.

If the fluoroscope is used arriving at a correct diagnosis in abdominal disease, it is essential that the surgeon called upon to make the diagnosis

should himself be present at the examination, and not expect the skiagraphist to supply him with three or four plates showing a bismuth meal at certain regions of the intestinal tract taken at certain times; looked at *de novo* such plates can convey very little, if any, information to any man who was not present at the examination. When the patient is on the X-ray table, and the surgeon is able to see the shadow cast by the meal, and at the same time by digital manipulation to separate different coils of intestine, or note the speed with which the meal is discharged from the stomach or reaches definite sites in the intestinal tract, or observed the absence or excess of peristalsis, he gains a large amount of knowledge which he would have lost had he relied upon the plates supplied. Provided the surgeon has been present at the examination, the plates of conditions he has actually seen are of the greatest assistance in refreshing his memory when proceeding to operate on the case or to write a report thereon. It is generally wise to see the patient in the erect as well as in the recumbent position of the different viscera vary both in health and disease according to the position of the trunk.

The following case illustrates well the difficulty of arriving at a correct diagnosis from skiagrams alone without personal examination of the abdomen with the fluoroscope or without making a thorough abdominal examination on the lines laid down in this paper.

T.P., male æt. 30, was admitted on September 11th, 1918, with the diagnosis of gastro-enteritis, which was later changed to intestinal adhesions. On September 20th I was shown some plates (of which I am going to show the lantern slides) which had been taken by the skiagraphist, and which were accompanied by a report which stated that the "findings point to adhesions (?) at hepatic flexure." I asked to be allowed to examine the patient before being expected to express an opinion as to his diagnosis. I saw him on September 23rd. For ten years past he had suffered from severe attacks of abdominal pain, and for the past three years from attacks of vomiting and diarrhoea. The cæcum was dilated, tenderness was well marked at McBurney's point, appendicular hyperalgesia was present, and the rectum was loaded. I wrote down my deductions from the examination of the plates and the abdomen as follows:—

1. Adherent appendix, kinked.
2. Fixed caput cæci.
3. Jackson's veil round cæcum and ascending colon.
4. ? Ascending colon and first limb of transcending colon adherent together.
5. Centre of transcending colon adherent in left side of pelvis.

On September 24th he was operated on and the following findings noted:—

1. Adherent kinked appendix, removed.
2. This released a fixed caput caeci.
3. Large Jackson's veil all round caecum and ascending colon.
4. At hepatic flexure the veil causes adhesion between upper two or three inches of ascending colon and first limb of transcending colon.
5. Centre of transcending colon fixed in left iliac fossa by overlying coils of small intestine.

The giants of medicine in the past who claimed Guy as their Alma Mater, Bright, Addison, Wilkes, Moxon, and Mahomed, attained the high standard of their diagnostic acumen by the regularity with which they attended the *post-mortem* room, and examined the pathological conditions present to account for the symptoms which they had observed during their patients' last illness. These giants were famed for their knowledge of diseases of the kidney, blood, heart, lungs, and liver. There are and have been very few giants among the physicians who have obtained their reputation by their skill in abdominal diagnosis. The reason for this is not far to seek. The physicians have not the opportunity of looking into their patients' abdomens to the same extent that the surgeons have, and it is noted with regret that so many of them do not take the opportunities offered to them by their surgical colleagues of being present to see their cases on the operating table. Far more is learnt by seeing a series of abdominal operations on patients whom you have seen and examined clinically beforehand than by attending any number of *post-mortem* examinations, for by far the greatest number of abdominal cases operated on recover, and do not reach the *post-mortem* room on account of the conditions for which the operation was performed, and secondly, those that do die have been investigated on the operating table, and there is usually no necessity for a further examination after death.

In this connection the two following quotations from C. L. Greene of St. Paul (*Medical Diagnosis*, page 1) are worth remembering:—

1. "Accurate diagnosis is prerequisite to accurate prognosis and effective treatment."
2. "Diagnosis demands a sufficiency of facts, truthfully recorded, intelligently sifted, and viewed without bias or prejudgment."

The safety and future welfare of the patient are enormously enhanced if the doctor can make a correct diagnosis of the abdominal condition which is causing the symptoms at a sufficiently early date, and is willing to call

in a surgeon as soon as the diagnosis is made. Many a useful life has been lost by the practitioner waiting until the diagnosis is all too evident, and the valuable moment when a successful operation might have been performed with little or no risk has been allowed to pass.

OUR CONTEMPORARIES

MEDICINE.

Remarks

ON

THE ETIOLOGY OF DIABETES MELLITUS

AND THE DIET AND CONDITIONS OF LIFE

DURING THE WAR.

BY

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Whatever may be the exact pathology of diabetes mellitus, certain etiological relations are of much interest and of some importance with respect to the prevention of the disease in England during this period of overstrain through the war.

Diabetes mellitus has been steadily becoming more frequent for many years. The death-rate from the disease has increased in England and Wales from 59 per million living in 1886, to 97 in 1906, and to 130 in 1915. The larger portion of the increased mortality rate may be clearly attributed to the increased frequency of the disease.

In 1908 I collected all the information I could obtain respecting the frequency of diabetes in various countries, and obtained information from all quarters of the world. Some was reliable, some unsatisfactory. My conclusions were:

The mortality from diabetes is much greater than in England and London, in the following towns and countries: In Malta, in many of the large towns of the United States (Worcester, Syracuse, Rochester, New York, Boston, Washington), in Bordeaux (France), in Berlin, Paris, Frankfort (am Main). Also experience indicates that diabetes is especially common in Bengal, Ceylon, Siam and Tunis. Certain races are especially liable to suffer: Jews, Hindus, and Maltese. In 1907, the year when my statistics were collected, the mortality for diabetes per 100,000 living in Malta and Gozo was four times that in England and Wales. In New York, Washington and Boston (United States), and in Paris it was twice that in London. In

Worcester (United States) and Syracuse (United States) and in Bordeaux (France) it was three times that in London.

Is more sugar and sweet food taken in these countries and by these races than in England? In many of the towns of the United States, and in Malta and Tunis, I understand that this is the case. May this be a predisposing cause and account for a portion of the greater frequency of the disease in these countries and races?

If we take the history of a large series of cases of diabetes we find the disease has very frequently followed certain conditions. We cannot say that these conditions were the cause of the disease, but the history of such conditions before the disease has been detected has been so frequent that they cannot be regarded as coincidents. Whatever other cause or causes there may be, they may very fairly be considered as at least extremely probable predisposing causes. If the patients had not been exposed to these conditions they would not have suffered from the disease until a much later period, or possibly not at all. In other words, the onset of the disease has been at least accelerated by these conditions of life or habits.

The etiology of diabetes is discussed in detail in text-books and monographs, and in this article I desire to draw attention to three predisposing causes only. In 1898 I published an analysis of the etiology in one hundred consecutive cases. Since that time I have taken notes on the etiology in most cases I have seen, and my results respecting the frequency of certain predisposing causes have been much the same. More recently I have inquired very carefully in another series, of 300 cases, respecting the frequency of (1) great and prolonged excess of sweet food and drinks, chocolate, etc.; (2) very great and prolonged mental anxiety, worry, and overstrain, or sudden shock; (3) family history of the disease. Other points in the etiology were also noted. I have asked questions on ten points, and collected the answers on separate slips of paper. (Most of these cases were seen before the war.) Though the answers varied much, the most striking points in the history in these cases were (1) frequency of great excess of sweet food or drink for a long period before the onset of the disease; (2) the frequency of prolonged mental anxiety, worry, or sudden shock just before the onset of the disease; (3) the frequency of a family history of diabetes. This is shown by the following results respecting the etiology in 300 cases:

History of prolonged great excess of sugar, sweet food, or sweet drinks (alone or combined with other predisposing causes) in 93 (= 31 per cent.)

History of prolonged and intense mental anxiety, worry, overstrain, or sudden mental shock (alone or combined with other predisposing causes), in 120 (= 40 per cent.)

Family history of diabetes (alone or combined) in 76 (= 25 per cent.)

No definite predisposing cause in 59 (= 19 per cent.)

The following are the results in detail, especially with respect to these three questions.

1. Very Great Excess of Sugar, Sweet Food, and Sweet Drinks.

A previous history of prolonged great excess of sugar, sweet food, chocolate or sweet drinks, alone or combined with other predisposing causes, was obtained in 93 out of 300 cases (31 per cent.). If we consider these cases in detail we have the following groups:—

(a) Great excess of sugar, sweet food, chocolate, or sweet drinks	40 cases.
(b) Ditto, plus great mental worry, anxiety, strain, or sudden mental shock	19 "
(c) Ditto, plus great overstrain in work	4 "
(d) Ditto, plus mental overstrain, anxiety, etc., and great overstrain in work	6 "
(e) Ditto, plus family history of diabetes	13 "
(f) Ditto, plus family history, plus mental or physical overstrain or shock	9 "
(g) Ditto, plus severe injury	2 "

33 cases.

The history showed that these patients had taken very large quantities of sugar in tea and foods, or very large quantities of jam, or sweets, or chocolate, or very sweet fruits and other very sweet foods. In many cases the patient had taken tea in very large quantities, containing much sugar, three times a day.

Chocolate had been taken in very large quantities by 21 of the 93 patients, either alone or with other sweet food or drinks. In some of these cases a history was also obtained of mental overstrain or shock, physical overstrain or a family history of diabetes.

Apart from the excess of very sweet tea already mentioned, in 17 of the 93 cases great excess of other sweet drinks had been taken for a long period before the onset of diabetes—herb beer containing much sugar or treacle, ginger beer, whisky with much sugar, sweet wines, gin and ginger beer, cider, sugar and milk. In some of these cases often other sweet food had been taken freely, or a history of mental overstrain, shock, or physical overstrain, or a family history of diabetes was obtained. Great excess of jam (jam

at nearly every meal), great excess of chocolate, great excess of tea containing much sugar (in one case thirty-six lumps of sugar in the tea daily), and great excess of herb beer containing much sugar or treacle (in one case 8 pints daily), were striking points in the histories of certain cases.

The following are a few examples of the continued excess of sugar and sweet foods or drinks taken for long periods before the onset of diabetic symptoms :

1. Female; stated that she had "lived on sweet food"; great excess taken; jam taken freely "at nearly every meal." Excess of sweet drinks, including herb beer containing sugar.

2. Female: stated that she had "lived on sweet food"; had taken sweet food at every meal; sweet fruit, jam, sweet cake, and chocolate, all taken in excess. Sweet lemonade taken freely.

3. Male; great excess of sweet food; half a pound of jam daily ($\frac{1}{2}$ lb. for breakfast and $\frac{1}{2}$ lb. for tea); tea three times a day, with 18 teaspoonfuls of sugar (about $4\frac{1}{2}$ oz. of sugar daily); beer four or five glasses daily; whisky twice a day; wine occasionally. Overwork; great mental strain and worry.

4. Male; excess of sweet food; half a pound of jam daily ($\frac{1}{2}$ lb. for breakfast, $\frac{1}{2}$ lb. for tea); sweet food at dinner; 4 to 6 oz. of cream chocolate daily; sweet tea three times a day (containing nearly 2 oz. of sugar); herb beer and sweet lemonade freely.

5. Male; great excess of sweet food and sugar; 3 lb. of chocolate weekly; 20 lumps of sugar (nearly 4 oz.) in tea daily. Great mental strain and overwork.

6. Female; excess of sweet food; about 25 lumps or more of sugar (about 4 to $5\frac{1}{2}$ oz. of sugar) in tea daily; herb beer 1 pint daily; bitter beer also taken daily.

7. Female; 36 lumps of sugar in tea alone daily (about $6\frac{1}{2}$ oz. of sugar). Great mental worry.

8. Male; great excess of sweet food and sugar (about 4 oz. of sugar in a pint of tea); about 6 oz. of sugar daily; 4 oz. of "sweets" daily; half a pound of sweet cake daily; beer taken freely.

9. Male; excess of sweet food; 4 oz. of chocolate daily; tea three or four times a day, well sweetened ($3\frac{1}{2}$ to 4 oz. of sugar in tea alone daily). Great mental overstrain.

10. Male; 18 teaspoonfuls of sugar (about 4 oz.) daily in addition to other sweet food.

11. Male; medical man with heavy practice in Scotland. Breakfast early, dinner very late in evening; "lived on chocolate" between these hours; no midday meals very frequently except chocolate. Great excess of chocolate daily.

12. Male; sweet food in excess; half a pound of sugar daily; great mental strain and worry.

13. Male; great excess of sweet food; tea very sweet; herb beer containing much sugar (8 pints) daily in summer (4 in winter). Great mental strain and hard work.

14. Male; great excess of a mixture of gin and ginger beer daily.

15. Male; three pints of herb beer daily; port wine rather freely. Great mental strain in work.

16. Male; five bottles of herb beer (containing much sugar) daily. History of a fall followed by neurasthenic symptoms.

17. Male; ten glasses of whisky daily well sweetened with sugar.

18. Female; great excess of whisky very well sweetened with sugar.

In a number of cases in young children a history was obtained of great excess of sweet food, with a large quantity of chocolate daily or a large quantity of sweets.

19. Baby 14 months old; had been fed on milk to which the mother added large quantities of sugar. Severe diabetes; death in two weeks.

II. *Prolonged and Intense Mental Anxiety, Worry, Overstrain, and Sudden Shock.*

Willis (the English physician who first discovered that the urine in diabetes had a sweet taste) 240 years ago attributed the disease to sadness and long sorrow, and from that date numerous writers have pointed out that the disease sometimes follows prolonged and intense mental anxiety, overstrain, worry, or severe mental shock. Such a history I have obtained in a large percentage of the cases of which I have notes during the last thirty years.

The following are the statistics in the series of 300 cases on which this article is based:—

The disease followed directly after a period of intense and prolonged mental overstrain, anxiety, or worry, or after a sudden very severe shock in 120 out of 300 cases (= 40 per cent.)

In these 120 cases we had a history of mental overstrain, anxiety, or shock alone in 61; along with a family history of diabetes in 25; along with

a history of great excess of sugar or sweet food or drinks in 25; along with a history of excess of sugar and a family history of the disease in 9.

Often associated with the mental overstrain, anxiety, or shock we have a history of physical overwork and overstrain and long hours of work, or occasionally a history of acute illness or alcoholic excess, or other predisposing causes.

A history of sudden mental shock immediately before the onset of the disease is occasionally obtained (13 out of the 120 cases). Often the disease directly followed the mental overstrain and anxiety caused by the death of a relative, or by the prolonged illness of a relative, or by nursing a relative through a long or critical or fatal illness (13 out of the 120 cases). Very often we had in these cases a history of great loss of sleep and of physical overstrain.

Often we had a history of great anxiety and mental overstrain through losses in business, frequently associated with overwork, and frequently with loss of sleep, and occasionally with excess of alcohol. Occasionally a history was obtained of excessive mental work in preparing for examinations and prolonged hours of close study just before the onset of the disease (5 of the 120 cases).

The loss of sleep, so often associated with sorrow and anxiety caused by the death or illness of a relative, by sudden mental shock, or business losses, in the cases just mentioned, is probably a very important point.

The two following cases are of interest with respect to sudden mental shock:

20. A lady who had just been confined developed diabetes directly after a sudden mental shock. The nurse was warming the baby before the fire. The nurse dozed, or fell asleep, for a short time, and held the baby too close to the fire, and the baby's legs were severely scorched. This caused the greatest shock to the mother; she was never well afterwards. In a few days symptoms of diabetes were noted. Previous to the shock the lady had been quite well, and the urine had been tested towards the end of pregnancy and found free from sugar.

21. In a man aged 57 symptoms of diabetes followed rapidly after a sudden mental shock. Four months previous to the shock he had passed a medical examination for life assurance, at which his urine had been tested. Whilst playing cards, the friend with whom he was playing died quite suddenly at the table. This caused the patient the greatest shock; he was never well afterwards. Within one week of the shock thirst and symptoms of diabetes were first noted.

III.—Family History.

A family history of diabetes was obtained in 76 of the 300 cases—25 per cent. Many striking instances were noted.

A history of great excess of alcohol was obtained in only a small proportion of the cases, much less frequently than a history of excess of sugar, or of mental anxiety or shock, or a family history of diabetes. In the statistics published in 1898 (chiefly hospital patients) I found a history of great alcoholic excess in 17 per cent. Amongst the private diabetic patients such a history was much less frequently obtained.

It is interesting to note that glycosuria occurs in some cases of Graves's disease. Occasionally the symptoms of Graves's disease diminish markedly, or cease, and symptoms of severe diabetes develop.

In many cases of acromegaly glycosuria or well-marked diabetes develops.

Diabetes sometimes follows directly after an acute illness, and the history often shows many other interesting etiological relations, but it is only to the three predisposing causes just considered that I desire to draw attention in this article.

In some cases no predisposing or exciting cause can be found (in 59 of my last series of 300 cases).

In statistics of a previous series of cases (1908) I obtained a history of great mental anxiety, shock, and overstrain in 35 per cent.; history of very great excess of sugar, sweet food or sweet drinks in 37 per cent.

This consideration of the etiology of diabetes shows the frequency, and I think the importance, of three predisposing causes; (1) Prolonged mental worry, anxiety, great mental strain, or sudden great mental shock, sometimes associated with overwork; (2) excess of sugar in the diet—sweet food or drinks, and excess of chocolate; (3) family history of the disease. Often we find a history in the same case of a combination of two or all three of these.

From my own experience in Manchester I think we shall find that diabetes has increased in frequency amongst the civil population of England since the war commenced. Amongst those who are doing military service I think we shall find that diabetes has not been much more frequent than amongst men of the same age in civil life before the war, but this is an impression and not based on definite statistics. If correct, possibly the increased exercise and better regulated diet, in which great excess of sugar and sweet food is not allowed, may account for diabetes not being more frequent amongst those engaged in military work. Possibly also they have less time for brooding and worrying than people in civil life. We may find, however,

that many who are now suffering from shell shock, neurasthenia, and functional nervous diseases will develop diabetes later.

Prevention of the Disease.

We cannot alter our family history, but we can all avoid excess of sweet food, sweet drinks, sugar, chocolate, and sweet jam during the war; and though we cannot avoid mental worry, anxiety, and shocks, we can often do something to diminish their effects.

It is important for all to avoid excess of sweet food, jam, chocolate, sugar, and drinks containing much sugar; but more so, for those who have great mental strain, anxiety, and overwork, and especially for those who, in addition, have a family history of diabetes. The sugar restrictions will do much to check the excess of sugar in tea and coffee and in cooking, but we have as yet no restriction directly as to jam, chocolate, and many articles of sweet food. Those who have great mental anxiety and overstrain, and especially if they have also a family history of diabetes, would do well to discontinue the addition of sugar in tea, coffee, and in food entirely, and to limit to the minimum the use of jam, sweet foods, chocolate, and drinks containing much sugar, such as herb beer, sweet wines, and combinations of sugar and alcohol. They would thereby be helping the Food Controller, as well as doing something to diminish their own risk of diabetes.

Alcohol, and especially combinations of alcohol and sugar, if they can still be obtained, should be very limited in the case of those who have much mental strain, anxiety, or worry. The regulations now in force will check any excess for most people.

Through the war, we are now all suffering, more or less, from mental overstrain, worry, anxiety, or sudden mental shocks, which will tend to increase the risk of diabetes. We cannot avoid them, but we can do something (and this is especially desirable in those who are suffering severely) to diminish their effects by directing our attention, whenever possible, to subjects not directly associated with the particular anxiety or worry, and especially by close occupation. Most people have now to work very hard, and occupation and close attention to work are useful in diminishing the effect of mental shock and anxiety; but when the overwork is excessive something may be done to diminish the injurious effects by putting aside any work not absolutely necessary, if this is possible.

Sleep is very important. When insomnia is associated with the great mental strains already named, prompt treatment is desirable, and if it cannot be checked, drugs such as chloralamine, trional, adalin, etc., taken under the direction of a physician for a short time, may be of much service.

Summary.

It is desirable for all to cut down sweet foods and drinks, chocolate, jam, sugar, and alcohol to a minimum during the war and especially for those who have a family history of diabetes, and are suffering from great mental strain or shock; they will thereby help the Food Controller and also diminish the risk of diabetes. Occupation and close attention to work are useful in diminishing the effects of mental worry and shock, and thereby the risk of diabetes, but in certain cases of excessive overwork it is desirable to cut off work not absolutely necessary, if this is possible; sleep is very important.

The recent food restrictions, as already mentioned, will check for most people any excess of sugar and alcohol, and will thus tend to diminish the risk of diabetes. Those who have been obliged through these restrictions to discontinue excess of alcohol or sugar should, however, not replace these by excess of non-alcoholic drinks containing much sugar, and excess of jam, chocolate, and other sweet foods which may be still obtainable. *B.M. Journal.*

Organic Paraplegia due to Lightning Stroke.

Paralyses are not rare in persons who have survived being struck by lightning. They are, however, commonly functional paralyses, and have a good prognosis. A. Porot has recently described three cases in which the physical signs pointed to organic rather than functional paraplegia due to lightning stroke. The patients were Serbian soldiers. In August 1916, on the Macedonian front a number of these men were reposing under a tree during a thunderstorm, in spite of the general belief that it is unwise to take cover under trees during thunderstorms, when the lightning struck and killed four of them. Others were struck and survived, and two of these were under the author's charge six and eight months after the accident. One had very extensive scars of burns on the right chest, iliac fossa, thigh, and knee. He was unable to stand or walk, exhibiting intense spasmodic paraplegia, with much wasting of the muscles, particularly in the left thigh and right leg. The left quadriceps extensor showed clonic spasms while at rest; there was patellar clonus and an extensor plantar reflex on the right side, while no plantar reflex could be obtained on the left. On both sides the abdominal and cremasteric reflexes were increased. Both legs were insensitive to touch, pain, and heat up to a level some two inches above the patella, and there was similar hypo-aesthesia of the trunk and arms up to the base of the neck. The sphincters were not involved. The second patient was less badly burned, and, by May 1917, had to a great extent recovered. He still exhibited, however, permanent diminution of sensation (touch, pain and heat) in various areas of the left leg, especially those supplied by the

second lumbar and first and second sacral segments, with loss of sensibility to heat in the same areas on the right. The third patient, who was not under Dr. Porot's charge, had not lost his senses when he was struck (as the other two had), but was suddenly seized with paralysis while marching next day. By June 1917, he had greatly improved, but showed much increased reflexes, ankle clonus on both sides, patellar clonus, and a feeble extensor plantar reflex on the left. He also had a traumatic cataract in the right eye, dating from the accident.—*B. M. Journal*.

A Symptom of Meningitis.

Signorelli points out that in cases of meningitis a painful spot is always present, situated on the inner side of the upper end of the mandible, beneath the lobe of the ear and in front of the mastoid process. Pain is evinced by the slightest pressure of the pulp of the examining finger. This tender spot is found in every case of meningitis, appears at an early stage, and is slow in disappearing. Thus it is in evidence during the whole course of the disease. Its existence can be discovered earlier than can the stiffness of the neck, or Kernig's symptom. It often happens that an examination must be made of patients in a serious condition, unconscious or nearly so, frequently delirious and incapable of giving exact information about their illness. This is frequently met with in the course of acute fevers, such as septicæmia, and especially in enteric fever, malaria, etc. The idea of possible meningeal trouble always suggests itself in these cases. The actual proof of retro-mandibular pain is, therefore, a most important indication, and the appearance of rigidity of the neck and of Kernig's symptom will establish the diagnosis as correct.—*Practitioner*.

Pituitary Headaches.

The severe headache of frank acromegaly is familiar, but perhaps more interest attaches to the early and less easily recognized manifestations of pituitary disorder before there are any permanent structural changes in the gland. The etiology of headache is so multifarious as to be sometimes baffling, and accordingly an article on pituitary headaches and their cure, by Pardee, is of practical use. This headache is frontal, deep behind the eyes, and the patient may indicate its position by placing a finger on each temple and pointing inwards towards the hypophysis. It resists ordinary treatment, is accompanied by so much fatigue that the victim can hardly drag himself or herself about, lasts from half an hour to two days, is commoner in women than in men, may coincide with menstruation, and pass off very suddenly. The skin on stroking shows a broad white line due to adrenal insufficiency, which is ascribed to the drain on adrenal function by

the exhausted pituitary; and at the climax of the attack there may be nausea and vomiting. As the pituitary and the adrenals control the mobilization of sugar the subjects of these headaches not unnaturally show anomalies of sugar metabolism and periodically have an intense craving for sweets, the satisfaction of which is almost invariably followed by a characteristic headache. The patients show signs of dyspituitarism, such as coarse hair with male distribution on the female, and *vice versa*, the eyebrows heavy and tending to meet, and in the female a moustache. The headaches are due to enlargement of the gland either from physiological or pathological causes, such as adenoma. The enlargement may be cyclical and connected with menstruation, compensatory to disease of the other ductless glands, or due to mental or traumatic shock. Skiagraphically the sella turcica may show various abnormalities, contraction or enlargement with apposition of the clinoid processes, or erosion of the clinoid processes. The administration of the whole pituitary gland cures these headaches and the accompanying symptoms in a large percentage of the cases, provided there is no progressive new growth of the pituitary body.—*B. M. Journal*.

Bleeding from the Rectum in Children.

If a mother says that she notices a little blood in the child's motion, and that the bowel comes down each time it evacuates, it may be a case of prolapsus, but it may also be a case of polypus of the rectum. This latter is not at all uncommon in children, and with the finger it can at once be ascertained whether there is a body hanging down by a narrow pedicle some inch or so within the rectum; if so, it is a polypus, and one should immediately, with the nail, tear the pedicle and take the polypus away. Though the polypus has been the cause of hæmorrhage in the rectum, sometimes for months together, it is very remarkable that one can tear through the pedicle and have no hæmorrhage at all.—*Practitioner*.

Treatment of Facial Paralysis.

The most useful agents are potassium iodide and galvanism, and massage if atrophy be present. In rheumatic cases, if seen early, warm fomentations should be used, the patient should be kept indoors, purges and alkaline diuretics should be given, and salicylates. Later on a blister should be applied over the mastoid, or other forms of counter-irritation employed. Quinine and iodide of potassium, even when there be no suspicion of syphilis, are both very useful remedies in these cases. If possible, the cause should be removed, and in the case of middle-ear disease this may be done, perhaps, by free drainage, counter-irritants, and the liberal use of anti-syphilitic

remedies if necessary. Galvanism should be applied to the nerve trunk just below the zygoma. Use the minimum current required for contraction slowly reversed, the application lasting for 15 minutes, once or twice daily. This preserves the function of the muscles, even if it does not restore the nerves; though nerve fibres may recover after some months' apparent interruption.—*Practitioner*.

The Treatment of Pernicious Anæmia.

I think it may be of interest to record a case of pernicious anæmia treated by intramuscular injections of salvarsan cream. My patient, a woman aged 39, had suffered from pernicious anæmia, showing all the usual blood changes and general signs and symptoms, for over two years. In spite of several temporary remissions the disease steadily progressed, and in November last she appeared to be dying. The liver reached to the umbilicus, and there was a loud hæmic murmur over the heart. The usual blood changes were present and the hæmoglobin content 15 per cent. I gave her an injection of 0.2 gram salvarsan cream (prepared from "Kharsivan" brand salvarsan by Messrs. Allen and Hanbury) into the muscle of the buttock (as suggested in the *British Medical Journal* in 1913 and 1913), repeating the same dose in a fortnight, and another of 0.3 gram a fortnight later. The result was really extraordinary. Within a few weeks she regained her usual healthy colour, the liver returned to its normal size, the hæmic murmur disappeared, and the hæmoglobin content rose to 85 per cent. She is now, six months after commencing the injections, apparently in normal health. Whether the recovery is permanent I cannot say, but a line of treatment followed by such remarkable results in such a hopeless disease is worth recording, and I hope that this brief note will lead to its further trial.—*B. M. Journal*.

Hyperpyrexial Heatstroke.

A Brief Note on its Etiology and Prevention.

BY

K. G. HEARNE, M.B., CH. B. (EDIN.)

In a recently written thesis on heatstroke—a disease which I studied in Mesopotamia during the exceptionally hot summer of 1917—the etiology, prevention, and treatment of the condition has been discussed more or less fully. It is impossible here to do more than touch lightly upon a few of the chief points which have a practical bearing on the causation and prevention of the disease. The object of this note, therefore, is to suggest the adoption

in heatstroke countries generally, of the following principles of prevention, which have proved completely successful in Mesopotamia after a prolonged and very thorough test under varying conditions. The remarks on etiology are based on a close study of some 240 cases, many of which occurred in the hots of a large base hospital among patients who were already in hospital with some other complaint, and in consequence an excellent opportunity of observing the disease in all stages of its development was afforded.

Etiology.

As regards etiology, and notwithstanding the diverse theories that are put forth in present-day textbooks on the subject, my observations in Mesopotamia point most conclusively to the belief that heatstroke is entirely due to suppression of sweating, which may be present from one to forty-eight hours before the attack.

With sweating suppressed, the bodily temperature tends to adjust itself, in accordance with physical laws, to the temperature of the atmosphere, which may be 115° to 120° at the time, and even to rise higher, for, as Sutton and Graham and Poulton have pointed out, a rise in bodily temperature produces increased respiratory and nitrogenous changes, resulting in a further increase of internal bodily heat. The processes continue until, when a temperature of about 108° or more is reached, sudden unconsciousness, delirium, and convulsions appear—the result of the physical action of heated blood on the specialized brain cells. The clinical picture of the fully developed attack of heatstroke is thus formed.

I have myself repeatedly observed the pre-existence of suppression—in one case for as long as eighteen hours before the attack—while in numerous other instances I have obtained absolutely reliable histories of it from patients on their recovery.

The cessation of perspiration is probably due to exhaustion of the sweating mechanism during several previous days of intensely severe weather, and there is strong reason to believe that the defect is localized in the sweat glands themselves. Furthermore, large doses of diaphoretics are powerless to produce sweating when once suppression has set in.

Prevention.

By the early recognition of suppressed sweating the prevention of heatstroke becomes an extremely simple matter. The practice which I adopted among hospital patients under my charge in Mesopotamia was to inspect them all periodically—every hour on extremely hot days—and to detect in this way those who required preventive treatment; any who were discovered to have a temperature of 103° with complete suppression, were stripped and

covered with a wet sheet. This measure simply amounts to an artificial means of producing the same physical effects as sweating. In cases in which the temperature had already risen dangerously high before discovery a portable electric fan directing a current of air over the surface of the wet sheet was placed beside the bed; the evaporative process was greatly assisted by it.

In mild cases, or where the treatment requires to be maintained for several days until the natural sweating power returns, a convenient modification of the method, and one more comfortable for the patient, is to raise the wet sheet on a couple of bed cradles, thus forming a kind of cool chamber in which the naked patient lies protected from the surrounding hot atmosphere of the hut. With this device the additional aid of a fan playing a current of air over the outside surface is usually necessary in order to produce an efficiently cool atmosphere below the cradles on very hot days.

Needless to say, the sheet requires to be kept wet, and much time and labour is saved by using for this purpose some form of spray, such as the Holder-Harrinan pneumatic disinfecting spray, filled with cold water.

If it were possible to remove the patient to a ward which was artificially cooled to a suitable temperature the individual cooling devices would, of course, be unnecessary. The success of these preventive measures can be judged from the fact that in my hut (sixty beds constantly occupied) at the hospital, nine cases of heatstroke with four deaths occurred within the first few days of the 1917 heat wave, but, directly the preventive system was commenced, the outbreak stopped; only two more cases occurred during the remainder of the heatstroke weather, which lasted continuously for two months. The average number of cases occurring in this district (Basra) during the whole period was nine a day. Neither of the two patients who developed the condition in my hut after prevention had been commenced had been placed under preventive treatment.

It will thus be seen that hyperpyrexial heatstroke is an absolutely preventable disease, the leading signs of onset being a hot dry skin, which is typically harsh to touch, and a raised bodily temperature. There is usually also frequency of micturition. These signs are present from one to forty-eight hours before the attack, consequently ample warning is given. The position is simply this: that the patient, having lost his natural means of heat dissipation, requires his bodily temperature to be artificially regulated for him during extremely hot weather until he again begins to sweat, or until the heat wave abates.

If Europeans in heatstroke countries were made acquainted with the premonitory signs and principles of prevention, I see no reason why heatstroke, in a dry climate at least, should occur. I have had no experience of

prevention in extremely humid climates such as Calcutta, where the atmospheric moisture may, possibly, hamper the evaporative process, but have no doubt that such a difficulty, if present, could be easily met by employing some other method of cooling the patient.

Even among troops on the march the principle of prevention is applicable. Water, and something that will act as a fan, are practically always obtainable, thus permitting an efficient form of first aid being applied to any man who exhibits the warning signs.

Among sleeping communities—for example, patients in hospital, or soldiers sleeping in barracks on very hot afternoons during heatstroke weather—periodic inspections are necessary in order to detect developing cases. These inspections can easily be carried out by an intelligent orderly, or staff of orderlies. The patient's general condition can be estimated roughly by touching the skin, and only occasionally is it necessary to take a thermometer reading, while those who are freely sweating can, practically speaking, be entirely disregarded.

In the after-treatment following upon an actual attack of heatstroke the tendency to relapses of hyperpyrexia are treated on exactly the same lines as for prevention. The patient frequently does not regain his powers of sweating for days after the attack—*B. M. Journal*.

SURGERY.

The Cure of Multiple Warts on the face

BY

CHARLES IND, M.D., SITTINGBOURNE.

The removal of these tiny growths, judging by what I have witnessed is often very difficult.

A recent patient's troubles have been the means of my devising a plan, a combination of two methods suggested separately by other dermatologists, which seems to give a speedy and admirable result.

A man, aged 35, had had the warts for eleven years. He had seborrhoea sicca of the scalp, and suffered from an extreme grade of seborrhoea oleosa of the body and face; the latter I consider not unimportant as far as the etiology of the warts is concerned.

The warts were of the variety known as verruca plana juvenilis (Stellwagon), tiny roundish bodies situated on the forehead and closely set, especially as they neared the hair border. On the forehead there were about ninety

at least. There were several dozens also on the scalp anteriorly. They were all of the above variety. One or two increased in size, and rarely two or three would coalesce; but in the main they remained discrete. Those on the scalp were yellowish and slightly vascular, whilst those on the forehead were pale and rounded, not very easily seen unless looked for sideways.

For the whole eleven years the patient had had treatment by dermatologists and doctors, but the number of warts did not show signs of diminishing. Internally he had had lime, thyroid extract, magnesium sulphate, and arsenic, also citric and other acids. He had also undergone electrolysis, and had had ionization with magnesium sulphate, and also with sodium salicylate, but without any result, good or bad. Locally, nitric acid had been used, and had scarred him badly. Glacial acetic acid and trichloroacetic acid had also been used. The warts were destroyed by these methods and did not recur, but usually more appeared later near the site of local treatment.

The various spirit-soaps, and lotions of resorcin, sulphur, and mercury perchloride were of no use; ointments of salicylic acid and sulphur gave extremely bad results, and the patient refused to go on with them. Salicylic plaster seemed of some service, but it is unsightly and attracts attention.

Acting on the belief that warts are infectious the patient wore a removable lining to his hat which was changed each day, and the warts were simply cut off by a sharp instrument; results were not very satisfactory and recurrence frequently followed.

Stelwagon recommends the use of a saturated alcoholic solution of salicylic acid, but says that it often fails to cure. By itself it did fail; but followed by abscission it was surprisingly effective. The warts and skin around were painted three times a day for one day with this liquid. On the following morning they were cut off by a flat sharp steel instrument, bevelled on one side only; this passes freely over the healthy skin, but when it comes to the wart cuts it off, leaving a slightly bleeding point. The surface is painted at once with the salicylic solution and twice more later during the same day, three times in all. This turns the little red points to a brownish-black colour, tiny scabs form which are allowed to drop off, taking about a week to do so, and leaving a perfectly clear healthy skin. The forehead is bathed with pure alcohol once a day until the scabs have all dropped off.

1. A razor is no use, a sharp flat instrument pushed over the skin is necessary.

2. Paint three times the first day and after abscission three times on the second.

3. There is neither pain nor scarring.
4. Sepsis does not occur.
5. The treatment is useless for larger warts.
6. The use of the salicylic solution prevents pain when the warts are cut off and recurrence afterwards.—*B. M. Journal.*

Enucleation of Tonsils without an Anæsthetic

BY

FREDK. SYDENHAM.

I have read with much interest the correspondence on sudden death under an anæsthetic. The conflict of opinion as to the relative advantages of different anæsthetics and the methods of their administration leaves the matter still open. I desire to advocate operative interference without any anæsthetic, which I believe in the great majority of cases is unnecessary, and adds uncalled-for danger both at the time of the operation and subsequently—the latter from possible bronchial and pulmonary irritation, where children shortly after the operation are sent home whatever the time of the year or whatever the weather; this is necessary in school and out-patient clinics. There is also in children the possibility of delayed chloroform poisoning in cases of acidosis. During the last twenty years I have operated upon 16,000 cases, during the first period with and for the last ten years without, an anæsthetic. I am aware that objections have been raised from the humane point of view, but it is by those who have not had much experience of it in the hands of an expert.

This is neither the place nor time for any description of the method, which I hope to give fully in a subsequent communication, but I may now say that 90 per cent. of all classes of cases combined can be enucleated as well without as with an anæsthetic. After the age of about 15 one can, after injection of a weak solution of cocaine and adrenalin chloride into the peritonsillar tissues, enucleate the great majority of tonsils by dissection, by the guillotine, or by a combination of the two. A small number almost completely fixed in their beds by frequent attacks of peritonsillitis and a few very nervous individuals may require, in addition to this local anæsthesia, a general anæsthetic, but such cases are not frequent.

This morning I enucleated the tonsils of a youth of 18, who desired to join the navy. After an injection into the peritonsillar tissues of $\frac{1}{4}$ grain cocaine, 12 minims of adrenalin chloride (P., D. and Co.), and 1 drachm of hot sterilized water, I gave it three minutes to act, during which I enucleated the tonsils and removed the adenoids of two children without an anæsthetic.

I mention this to point out the ease and rapidity of the methods of both local anæsthesia and of no anæsthetic at all.

I frequently have three or four cases in succession where the children scarcely make a murmur. Of course when the child comes into the theatre crying it will continue to do so; but, generally speaking, I do not think there is any more pain than in the extraction of a tooth, and frequently not so much. There is not half the loss of blood, bleeding generally stopping in a few minutes, and the patient is generally ready to go home in half an hour.

More than two hundred medical men have had experience with me of this method and have expressed their agreement with it. If it had been universally followed the fifty-six deaths recorded in the *Proceedings* of the Royal Society of Medicine would not have occurred. When the anæsthetic is given by a skilled anæsthetist and the operator is an expert the question is a little altered, but in hospital practice, where one is dependent upon continually changing house-surgeons, anæsthesia becomes very dangerous, whichever anæsthetic is used.—*B. M. Journal*.

Referred Symptoms in Commencing Inguinal Hernia

BY

W. B. COSENS, CAPTAIN, R. A. M. C.

M. O. i/c Prisoners of War Hospital, Dorchester.

I have examined 18,000 English and German soldiers, and have been much struck with a common symptom amongst a considerable number—namely, pain in the region of one costal margin, increased tension of the upper segment of one or other of the rectus muscles, a general feeling of discomfort in the upper part of the abdomen without any definite physical signs of indigestion or other intra-abdominal trouble. If such a case presents itself, and if the patient has been standing or walking for a couple of hours, and equal pressure is applied over both internal abdominal rings (with the thumb of each hand), the facial expression will show uneasiness, or actual pain may be localized over the ring on the same side as the abdominal pain for which advice was sought. Over and over again a cure of the symptoms has been obtained by the application of a lightly fitting truss.

The anatomical reasons to my mind are quite plain. The nerve supply of the intestines is from the solar plexus, situated chiefly round the crura of the diaphragm, and that of the abdominal muscles is through the lower intercostals.

The diagnosis to be correct must not depend upon asking if there is pain in a particular locality in the iliac region. If there is a facial expression of discomfort, or actual pain, ask where. The answer will mention the ring on the same side as the abdominal symptoms. This method of examination will exclude malingerers, and any leading question will cause in all probability a false diagnosis.—*B. M. Journal*.

Wound Infection

BY

JOHN O'CONOR, M. A., M. D., T. C. D.

Senior Medical Officer, British Hospital, Buenos Aires.

Even at the risk of the accusation of repetition I consider it my duty, in present circumstances, to draw further attention to the excellent results which may be obtained in desperate compound comminuted fractures and other grave septic wounds by the prompt administration of ether, application of a tourniquet, deliberate exposure, and obliteration of pockets and sinuses by large incisions, complete removal of foreign bodies (including denuded infected fragments of bone), thorough tunnel gravity drainage, efficient hæmostasis, frequent irrigation with hot peroxide lotion (60 to 120 c.cm. to litre), followed immediately by hot carbolic lotion (15 c.cm. to litre), hot mercury perchloride (1 in 2,000) fomentations (wrung dry before application), and absolute rest on a suitable splint until the wound is healed, with extension when necessary. To this should be added, whenever possible, permanent outdoor treatment, which is infinitely preferable to any indoor "primrose sunlight" illusion, and a liberal allowance of wine, stout, or beer with meals.

As far as my personal experience is concerned I have yet to find the equal of the above combination of surgical principles with what, in my opinion, are the best of all antiseptics, so long as the latter are not used in a strength to destroy friend and foe alike; and their action is considerably enhanced by heat (fomentation) to the part and complete rest to the limb.—*B. M. Journal*.

CASES AND COMMENTS.

"A Simple Sterilizing Solution."

BY

P. BHASKARA RAU, L. M. P.,

Regd. Medical Practitioner, Madras.

It is a matter of common though painful experience to all practising physicians, that the sterilization of a hypodermic syringe is a nuisance. In addition to the cumbersome apparatus required in the shape of (1) a spirit

lamp, (2) a vessel to boil the syringe, etc., the time lost—and valuable time—in most cases is enormous. In addition to the above articles, one must also have some sort of antiseptic to sterilize the skin of the patient at the site of injection.

I claim no originality as a friend of mine gave me the recipe for a simple solution for sterilizing which goes a long way towards removing many of these difficulties.

The composition of the solution is :—

Lysol m. xx.

Aether Pure zii

Spirit Rectificat or methylated zi

Mix. keep in glass stoppered bottle.

All that is required is a wide mouthed (say $\frac{1}{2}$ "— $\frac{1}{4}$ " diameter) glass stoppered bottle, holding about 2 ounces, (an empty "Formamint" tablets bottle will answer the purpose quite well) to keep the solution, and your pocket sterilizing out-fit is ready. When you want to sterilize the syringe, you have only to drop the parts of the syringe into the solution and keep for about 2 minutes. Then assemble the parts again by means of a dressing of dissection forceps, and the syringe is ready for use. After fitting the parts you can rinse the inside of the syringe with the same solution by drawing the fluid once or twice and ejecting it again into the bottle.

Then to sterilize the part of the skin, at the site of the injection, dip a bit of cotton wool in the solution, and rub it over the part, a few times (Just as you apply Tinct. Iodine). Though I never made any examinations to find out whether the skin was actually free from all organisms, after the application, my results justify me in the conclusion that the part was sterile enough, for all practical purposes.

Now the skin and syringe are ready, and it only remains to get the substance to be injected ready.

Most of us are conservative enough to still largely use the "Tabloids" though thanks to many firms there are excellent sterilized solutions for hypodermic injection in ampoule form in the market. If one uses tabloids the substance has to be dissolved, and the solution sterilized and this is generally done by boiling.

At this stage where we had to keep a spirit lamp—in our medicine chest, the solution comes to our help again. The ball of cotton with which you have cleaned the skin, will if burnt give the necessary amount of heat, to boil the solution.

It will thus be seen that the solution is a very useful acquisition.

The advantages with it are :—

1. It sterilizes the syringe rapidly and efficiently.
2. It sterilises the skin and thus saves the necessity of carrying a separate antiseptic for that purpose.
3. It does away with the use of a spirit lamp—and incidentally it gives a chance for burning and thus disposing of the bit of cotton which might carry infective organisms from the patient's body.
4. It can also be used for sterilizing small instruments for a minor or emergency operation—such as sterilizing the blade of a knife or needles, etc.

5. I have used this solution, in over a hundred cases up to now, and have never experienced any untoward results. On the other hand intelligent patients, who had injections before, tell me, that the injection is almost painless, a statement which I am inclined to attribute, to slight anaesthesia which might be produced at the site, from the aether in the solution.

Hæmatemesis and Melena as a result of Mitral regurgitation.

BY

J. APPA ROW, L.M.P.

Sub-Assistant Surgeon, Chittoor.

I was called upon to attend a case in Santhapet about $\frac{1}{2}$ mile from Chittoor at about 3 A. M. on 21st May 1919.

I first found the patient in the following condition : The patient was an old man of about 70 years. He is short and lethargic I found him quite unconscious and flat on the mat. He did not respond to anybody's call. The extremities were very cold and fell down like logs when raised up and left off. The pulse was very feeble, weak, thready and counted about 140 per minute. The heart sounds were quite inaudible to the Binaural Stethoscope. The respirations were very feeble and hurried counting about 35 per minute. I found him in this helpless state.

The history goes as follows :—The patient was a merchant attending to his shop and to a sort of exertion also. In the daytime he had a big vomit of blood and large motion of the same bloody character. The blood that was passed in the daytime (on 20th May) both by motion and vomit was something like 2 pints. Soon after the vomit and motion the patient became senseless and was brought home in a bandy.

I was very vague about the diagnosis ; but with the intention of stopping the hæmorrhage, whether internal or external and with the intention of

stimulating the heart and the body itself I gave him a hypodermic injection of :—

Emetine Hydrochlor Gr. $\frac{1}{2}$
Strychnine Dose Gr. $\frac{1}{100}$.
Atropine Sulph. Gr. $\frac{1}{100}$.

We gave him hot applications to the body also. An hour after the injection was given the patient came back to his senses, but he was very restless. The pulse also became stronger and the respiration more powerful. At 6 o'clock he was still restless and I put him on the following prescription :—

Liq. Morph Hydrochlor $\mathfrak{z}$ i
Am Bromide Grs. 20
Calcium Chloride Grs. 80.
Ext. Ergot Liq. $\mathfrak{z}$ i. ss.
Aqua Chlorf ad $\mathfrak{z}$ iii.
(one ounce) $\mathfrak{z}$ i. T.D.

This day he had two more vomits, though they were not larger. These vomits also were bloody. He had one hard motion on exertion. The motion was tarry black and under microscope some R. B. C. were found. That night I gave him another hypodermic injection of Morph. Sulph. $\frac{1}{2}$ grain and Strychnine Hydrochlor $\frac{1}{100}$ gr. The next morning I gave him 4 gr. of Calomel and 5 gr. of Sodii. Bicarb. At about 10 A. M. on 22nd he became very restless and was much puzzled. Then at 12 o'clock he had a good motion and much relieved of the trouble. But the motion was of the same colour. Now he got a good sleep till 4 P. M. This day again at 6 o'clock I gave him an injection of Morph. Sulph. and Strychnine Hydrochlor in the same dose. On 23rd the patient was far better, the pulse was stronger and counted only 100 per minute. The heart sounds were audible to-day. On a keen auscultation of the heart systolic murmur completely occupying the 2nd sound was heard in the apical area. It had the conduction towards the axilla. He had no more vomiting and the faeces almost became faecal in character. On 24th the signs of mitral incompetence were evidenced by slight oedema of the feet and also cyanosis. Up to this time I was repeating the same above written mixture by mouth. This day I put him on the following prescription :—

Liq. Morph Hydrochlor. $\mathfrak{z}$ i.
Am Bromide Grs. 20.
Mag. Sulph $\mathfrak{z}$ v.
Tr. Digitalis m. 20.
Tr. Nux Vomica m. 30.
Aqua Chloroform ad $\mathfrak{z}$ iii.

$\mathfrak{z}$ i. T.D.

I put him on complete rest and the diet was milk and congee. This mixture I continued for about 15 days by which time he was alright. Heart murmur also was not heard. Only slight oedema of the feet remained which subsided itself afterwards as a result of rest. The patient is now quite happy.

THE ANTISEPTIC

OCTOBER, 1919.

Medical Pupils and their Stipends.



WE have before us a copy of the memorial submitted by the military medical pupils of the Royapuram Medical School, Madras, to the Surgeon-General with the Government of Madras praying for the grant of enhanced rates of stipends and hut allowance. At present military medical pupils get a stipend of Rs. 12 and a hut allowance of 6 annas per month and civil medical pupils Rs. 15 per month, while Military Assistant Surgeon pupils, who are recruited exclusively from the Anglo-Indian community, are allowed not only free boarding, lodging, clothing and bedding—we have no means of knowing how much all those cost—but also Rs. 9-4-0 per month for pocket expenses alone! No one who has any idea of the abnormal conditions prevalent in the country and the severe life and onerous duties to which the memorialists are trained can in all conscience dispute their plea for more liberal allowances. Their present stipend, viz., Rs. 12 is but Rs. 2-12-0 more than the pocket money allowed to Military Assistant Surgeon pupils, and is hardly sufficient to meet the monthly bill of the ordinary eating houses for two ordinary and monotonous meals per day.

Look at this picture and that. The general educational qualifications, the course of professional training, the examining board and the duties expected of them after completing the course being almost the same in the case of the three classes, viz., military medical pupils, civil medical pupils and Military Assistant Surgeon pupils, it passes our comprehension why there should be such an invidious and anomalous distinction between the first two and the third classes, and why the memorialists should be kept on almost a starvation stipend. We leave it to the readers' imagination and sense of equity.

And yet the charge is often laid at the doors of the Indians that they are generally disinclined for military medical service and that not a few of those that are trained for it change their mind at the end

and take to the civil line or start private 'practice. While we set our face against this 'hide and seek' way of doing things sometimes resorted to by our young men we must at the same time point out that it is highly inexpedient and even disastrous that race and colour distinctions should be allowed a place even in the sacred domain of medicine or that a section of the youths undergoing training for the profession should be nursing a grievance of this kind. Already we are feeling the inadequacy of the numerical strength of the medical profession and a general apathy on the part of our young men to join the Military Medical Service, and never has this been more keenly felt than during the last war. It is therefore evident that if recruitment should be satisfactory the conditions of training and service should not only be improved but also made positively attractive.

We would therefore suggest that the stipend allowed to these pupils should be not less than half the initial pay of a Sub-Assistant Surgeon because it is futile to expect a set of half-starved and half-clad pupils to have any great enthusiasm for the profession for which they are trained.

Turning to the question of hut allowance we are at a loss to know on what data the allowance has been fixed at the munificent sum of 6 annas per month, while the room rent recovered from the pupils in case of their finding a lodging in the Medical School hostel is as much as Rs. 3 per month. Where are they to find place for them to live in for a rent of annas 6 a month and who does not know how insanitary and unhealthy are the localities in which cheap accommodation can be found in this City? As it is, the hut allowance is a mere mockery and insult to an Indian and worse than none at all. We strongly appeal to the Government that they should either provide the pupils with suitable quarters in a healthy locality near the Medical School or allow them a room rent of Rs. 5 per month at least. Another item of grievance hinted in the memorial is the inadequacy of the clothing. Four suits of khaki and two puggies for the whole course of 4 years can hardly be considered an adequate clothing, especially in a city like Madras where, in consequence of excessive sweating, the clothing wears out much sooner than elsewhere. Since the above was in type, we understand that these pupils have been directed to be in their military uniform even when attending the classes. We would therefore strongly urge that the scale of clothing supplied to these may be raised to the level of that applicable to their Anglo-Indian brethren in the Military.

1918.]

THE ANTISEPTIC.

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CORRESPONDENCE.

From

To

The Personal Assistant to the
Surgeon-General with the
Government of Madras,
ROYAPETTAH.

Through

THE SUPERINTENDENT,
Royapuram Medical School,
Madras.

Sir,

I, an Indian Military pupil, beg to approach you with the following few lines in connection with the long felt grievances of Indian Military pupils in general for your sympathetic consideration and favourable orders.

The stipend awarded to a Military student at present was raised from Rs. 9 to Rs. 12 from April 1916. In the present abnormal conditions consequent upon the great world war this is an extremely inadequate amount as compared with what the Madras Government has this year been graciously pleased to grant to the Civil Medical pupils, a stipend of Rs. 15 per mensem instead of Rs. 9, an increase of 66½ per cent. I may therefore be allowed to pray for a reasonable enhancement of Military stipends, corresponding to that recently sanctioned to the Civil Medical pupils so that the Military pupil may hereafter at least be allowed to draw Rs. 20 instead of Rs. 12.

In their annual notification the Government declare that a Military pupil will be given either free quarters or a monthly hut allowance of annas 6. But as a matter of fact free quarters are not at all given nor does the present condition enable me to obtain a suitable lodging for that amount. A Military pupil now living in the hostel is obliged to pay to the Government a room rent of Rs. 3 per mensem and receive back the hut allowance of annas 6, the alternative of free quarters as notified by the Government and therefore I beg that a Military pupil be allowed free quarters, failing which, I may be granted in lieu a house rent allowance equal to what I am now charged if I were in the hostel.

Under the present arrangement I am supplied with four suits of khaki clothing and two puggies during my four years of study. In this connection I beg to request that the pattern of the coat now supplied me be changed to the open at neck pattern. In addition, I beg that I may be supplied with two pairs of brown boots and an overcoat.

Under the circumstances detailed above I most humbly pray that the benign Government may be graciously pleased to redress my grievances for which act of kindness and charity I shall as in duty bound ever be grateful.

MADRAS,

11th October 1918.

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I beg to remain, Sir,
Your most obedient servant,
Indian Military Pupil.

ACKNOWLEDGMENTS.

We acknowledge with thanks, receipt of the following Journals.—

The Bristol Medico-Chirurgical Journal. The American Journal of Clinical Medicine. The Good Health. The Indian Medical Gazette. The Practical Medicine. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. The Canadian Medical Association Journal. The Calcutta Medical Journal.

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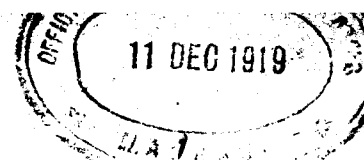
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Half page Rs. 4-8 or 6s. a month.

The subscription for the Journal is Rs. 5 a year, payable strictly
in advance.

Subscribers will be taken on at any period of the current year.



THE ANTISEPTIC.

Vol. XVI.]

NOVEMBER 1919.

No. 11.
Annual Subscription Rs. 5

Original Articles.

• CATARACT

BY

V. G. MUTHAYYA,

Government Ophthalmic Hospital, Madras.

(Continued from page 367).



HOW long a time does it take for a cataract to become ripe. The progress of cataract is sometimes rapid, sometimes slow. A cataract which has remained unchanged for quite a long time has been said to become almost completely mature within a few months. So it is for the most part impossible to answer with precision the patient's question as to when the cataract will become ripe. The lenticular opacity develops the more rapidly, the younger the person is. Light coloured cataracts become mature more rapidly than dark ones. A brown or black cataract can never become mature in the ordinary sense of the word. It is the sclerosis of the entire lens which may be said to have been converted *in toto* into a nucleus and hence always preserves a certain degree of transparency. For the laity, a criterion of the ripeness of the cataract, that is its readiness for operation, is the fact that the eye is no longer in a condition to count fingers. This does not hold good, for brown or dark cataracts which do not generally become so opaque that the patients cannot perceive the large sized objects. Nevertheless those can be operated upon, with good results. Since the lens has been transformed into a horny translucent mass it can readily be sheeled out from its capsule. The rapidity of ripening is also influenced by the etiology of cataract. Certain cataracts, such as diabetic, traumatic, and glaucomatous cataract; cataracts, resulting from detachment of retina are distinguished by the rapid rate of progress.

• Specially contributed to the Antiseptic.

In persons over 55 or 60, in whom the nucleus is large, many a cataract can be completely removed which does not come up to the strict standard of maturity; cortical substance would have been liable to adhere to the capsule and to be left behind.

Diagnosis from past iritis.—Inflammatory exudation of some standing, in the area of the pupil would afford somewhat similar appearance but would be attended by other signs of the previous inflammatory process such as inactivity of the pupil, Synechie, disorganisation of the iris, etc., and the opacity would be seen to be more in the plane of the iris than does any lental opacity. Rarely cataract is seen behind this exudate membrane.

Before passing the eye for an operation the following points ought to be attended to. Col. Kirkpatrick lays stress on the fact that the eye is only a part of the body, therefore it is essential that the general health of the patient must be taken into consideration. The state of the eye should be carefully investigated; also any cause likely to produce straining, as cough or constipation and the presence of intraocular complications. The examination of the eye before the lens became opaque, will provide a reliable data. The examination of the other eye, if the lens is clear, will also help to some extent. As regards diabetic cataract, the operation does not do any harm in moderate chronic cases. Anyhow they have to be treated with respect. If the urine is loaded with sugar, it is better to wait until by suitable treatment the amount of sugar has been reduced to its lowest possible limit. There must be no inflammation about the eye, and no iritis or irido-cyclitis of the fellow-eye. If the other eye be atrophic and tender from past destructive irido-cyclitis, following perforation of the globe, it must be excised. There must be no trace of scleritis, keratitis, etc. nor any scabby skin eruption close to the eye (Herbert). The conjunctiva must be healthy; small meibomian infarcts are disregarded; any discharge if present must be examined for bacteria and treated, Kochweeks with Argt. 3 drops or Argt. 10 to lids, Pneumococci with Ethylhydro curine, Morax Axenfield with zinc drops 5 gr. to one ounce every 4 hrs. and zinc ointment to lids. **Presence of corneal opacities.** Big opacities seriously interfering with vision, contra indicate operation, while small ones diminish the future acuteness of vision. Corresponding prognosis should be given. **Lachrymal passages** must be examined. Dacryocystitis requires extirpation of sac, otherwise infection of wound with disastrous results is likely to ensue. If lachrymal obstruction is present that is, if lachrymal passage is not pervious to fluoresceine the inferior canaliculus is dilated with the canaliculus dilator, the passage must be made free by syringing the sac with normal saline solution, after probing, if necessary. **Iris.**—The depth of the anterior chamber must be noted. The iris must be active. If there be past iritis, the patient is treated with mercury or

with potash iodide and mercury. Preliminary iridectomy is done first and then the extraction of cataract. Intraocular tension must be normal. Pyorrhoea alveolaris must be attended to, so also caries teeth. A dentist should be consulted if necessary.

For success in cataract operation, it is not only rational to select a rational method, but also to devote the utmost attention to a series of minute details in its performance. I shall here describe the preparation for operation as is done in the Government Ophthalmic Hospital, Madras. The day before operation, after the eye is passed fit by consideration of the points mentioned above, the lashes of the upper lid are removed close with scissors, as the eyelashes harbour germs, which cannot be got rid off, and furthermore they are difficult to cleanse and stick to the dressings. The skin of the lids, eyebrow, and the vicinity are washed with synol soap and sterilized water. A small piece of sterilized ling and cotton wool is placed on the eye and retained by a bandage. This is known as the trial bandage. Next morning if there is no discharge in the dressings, one or two instillations of atropine is given into the eye. Five or ten minutes after, the skin of the lids and the vicinity is washed with perchloride lotion 1 in 3000. The conjunctival sac is also irrigated with the same solution for full two minutes except in the diabetic and anæmic cases where a minute or a minute and a half is sufficient. The above lotion is not used as an antiseptic, but it acts as an irritant, throwing out some mucous within which are enveloped the germs, if any. This is Herbert's method of disinfection of conjunctiva. Cocaine solution 4% is instilled into the eye, 4 or five times, at an interval of about 4 minutes. After instilling cocaine, we must take care that the patient keeps the eye shut, because the frequency of winking is diminished as a result of cocaine anæsthesia, and hence the cornea, if uncovered, is apt to become dry upon its surface leading to keratitis. Cocaine anæsthesia lasts about ten minutes. It affects the superficial parts, as the cornea or conjunctiva, while the iris remains sensitive. All solutions that are used to the eye are sterilized by boiling, viz., atropine, cocaine, argyrol, dionine, hyoscine and eserine. A morphia injection is given hypodermically, 20 minutes before the operation, to keep the patient quiet during operation. The morphia solution is prepared fresh on the very morning of the operation; the dose is 4 to 7 minims. 4 minims in women and 6 minims in men, is the average. 5 minims of Morphia contain atropine 1/150 Gr. The patient is brought on the table. The edges of lids are pressed together with the thumb and index fingers of 50 gr. left hand. The meibomian matter is thus squeezed out, this being removed with a saline swab. Any mucus that is present in the fornix is removed with saline swabs. The speculum is inserted, the conjunctiva is freely flushed with saline solution 1.4%. Immediately before operation, the instruments are sterilized by boiling in a 1% solution of sodium carbonate the sharp ones in racks and blunt ones in a tray

which is made of wire gauze and placed by the side of the operating surgeon. The trays and racks holding the instruments are lifted out of the sterilizer and all the moisture possible drained off by shaking before, placing them on the instrument table. The blunt ones are boiled for 3 minutes, and the sharp ones for 1½ minutes. The short period of boiling does not affect the temper of the knives as fifty sections are frequently made by one knife. The surgeon and his assistant wear sterilized aprons great stress is used on using dry instruments and it is found useful to keep a sterilized towel in the belt of the surgeon's apron on which the handles can be wiped if necessary. It is the duty of every surgeon to precede in a perfectly aseptic and antiseptic manner. Contamination of the wound may either be effected by means of the operator, his assistant, instruments or it may take its origin from the eye itself or its vicinity. As the operator and his assistant have to talk to the patient they wear a sterilized mouth mask to avoid infection from their mouth. If the patient be nervous and troublesome, the attention of the patient is distracted by some pleasant conversation about his residence, occupation, relations or some interesting subject. In children and very nervous adults, chloroform is administered; when instilling drops a question arises why the canaliculi should be closed. Chiefly when we give drops in children, we close the canaliculi. I may say the absorption of any drop from the conjunctiva is not so much as from the nasolacrymal duct. The details of the operative procedure will be described later on.

Therapeutic agents have no value whatever in clearing the opacity; an improvement of the sight may be obtained by means of atropine or homatropine drops in those cases in which the opacity occupies principally the pupillary area of the lens; in that case, after dilatation of the pupil, the peripheral transparent portion of the lens can be employed for vision. I have heard several patients with nuclear cataract after the examination in the dark room is over, being satisfied with the improvement in the distant vision under Homatropine craving for a prescription for similar drops for use at home. The popular and quack remedies which are alleged to have been of assistance in cataracts are mostly, such as contain belladonna, and act favourably upon the sight in the way just mentioned. The improvement thus obtained however is transient, disappearing as soon as the peripheral layers are implicated in the opacity by the progress of the cataract. A cure of cataract can only be secured by operative means. The following are the various methods:—

(1) By iridectomy or artificial pupil. This is useful only in particular cases where the cataract is non-progressive and the extent of the opacity is equal to or very slightly greater than the size of the normal pupil. It is done by an iridectomy in the downward and inward direction corresponding to the line of vision. This method will be useful in cases, where the distant vision is improved by full dilatation of the pupil. Otherwise recourse must

be had to absorption or removal of lens. Iridectomy is useful in lamellar cataract and nuclear cataract. Here the transparent periphery may be exposed and rendered available for vision.

(2) By solution and absorption. By lacerating the anterior capsule and breaking up the lamina of such a lens, the aqueous humour is brought into contact with its fibres, and has the effect of causing them to become opaque and swollen. This happens within 24 hours after operation and is immediately followed by gradual disintegration, solution, and absorption. This method is called discission. It may be employed in any soft cataract, or in those soft cataracts that still contain transparent portions of the lens, viz., lamellar, and in high myopia, where the lens is perfectly transparent when it is a question of doing away with a high degree of morphia by operation. Cataracts, which are congenital or which develop in childhood, should be operated on as early as possible. If the cataract is not operated on, the development of the retina is arrested, amblyopia, exanopsia may be produced. No chloroform is necessary except in young children and people of nervous temperament. Pupil must be dilated by the previous use of atropine. The lids being separated by a speculum and the globe held steady by a fixation forceps, one Bowman's needle is passed through the limbus, on the temporal side into the anterior chamber. The anterior capsule of the lens is perforated within the area of the dilated pupil by gentle to and fro movement, the lens matter having been broken up to the extent desired, the needle is gradually withdrawn. The posterior capsule of the lens must not be wounded, as the vitreous is liable to escape and interfere with the action of aqueous upon the lens. The complete solution of the lens by this process usually requires three or four operations, occupying a period of 4 to 10 weeks. The pupil should be kept dilated after operation, with atropine, one, two, or three instillations as required. In traumatic cataract needling should be done only after the inflammatory symptoms subside by treatment but if the inflammation or increase of tension is due to the great swelling of the wounded lens, the removal of the latter should be done at once. The advantage of waiting a long time in traumatic cataract, is that a great part of the cataract is absorbed spontaneously; the pupil should be kept dilated. The main object of discission consists in the freedom from danger of the operation itself, and the simplicity of the after treatment, since a small puncture in the cornea closes completely. The patient is not compelled to keep to his bed after the operation, and the bandage may be dispensed with, after 48 hours. If the course is favourable, no further treatment is required than to keep the pupil dilated with atropine until the absorption of the lens is complete.

Complications.

(1) If the laceration of the capsule and lens is extensive, the lens becomes so rapidly swollen that the intraocular tension is increased. If a patient

has vomiting attended with pain in the eye it is often an indication of the rise of tension.

(2) Ciliary congestion may be increased and attended with pain during three days after operation. Iritis may result, leeches, purge, continuation of atropine, mixture salicylic and mercury and aspirin alternately, internally, will prevent further complications.

(3) If the inflammatory symptoms do not subside but if tension increases immediate removal of lens should be done by linear extraction.

But to shorten the duration of treatment we also employ discission simply as a preliminary operation to make the lens fit for extraction. For the purpose one makes a discission quite free, so as to get a rapid opacification and swelling of the lens. As soon as this is advanced to a certain point which is the case some days or weeks after the discission, the softened and disintegrated lens is removed by linear extraction.

Linear extraction: This is so called because the section is at least approximately linear in shape in contrast to a flap and a line is noticed in the cornea, i.e., the seat of section in most of the cases after operation. The needling operation is done. Keratome is passed from the top of cornea into the anterior chamber. The soft lens substance is massaged with curette passed into the wound; the fragments of the lens being got out by the spatula placed on the cornea outside and completed by the douche from the McKeown's irrigator. The advantage of linear extractions consists in the fact that the section is short and passes through the cornea obliquely for which reasons it closes readily. It does not necessitate iridectomy unless an impaction of iris is threatened. Col. Elliot's operation for juvenile cataract was needling and linear extraction combined, and both eyes at the same sitting under chloroform.

There are cases of cataract in children in which the lens instead of being soft has quite a hard nucleus, on the other hand very rarely cases of senile cataract have been observed without nucleus.

(3) By the extraction of the entire cataract.—

The object of cataract extraction is to remove the lens from the eye immediately and as completely as possible. After 30, the structure is so dense and the nucleus so large that a larger incision than that for linear extraction is required for its removal. It is better to avoid operating till the opacity has extended to a greater portion of the lens. Otherwise the unaffected corneal substance remains adherent to capsule. Owing to its transparency it is difficult to detect it at the time of operation but it becomes swollen and opaque afterwards and gives rise to some trouble as secondary cataract. When

the whole lens is opaque the cataract is said be mature or ripe, the signs being no red reflex from the fundus by ophthalmoscopic examination, no iris-shadow. There are circumstances which sometimes render it highly inconvenient to wait for a complete maturity. There may be equally developed cataract in the second eye, by which the patient is deprived of his usual vision. The patient's place of residence may be beyond the reach of surgical skill and he may be unable to present himself for periodical examination. Under these circumstances it is best to perform iridectomy upwards as a preliminary operation. Iridectomy has the effect of lessening the danger of iritis after extraction and it also enables the cataract to be removed before it is quite mature, without much risk; and in some cases it is supposed to hasten the maturing of the cataract. Smith's expression operation may be done in such cases. Cataract in an eye may be extracted even before it is fully ripe when the other eye is so clouded that the patient is incapacitated from reading, writing or making his way about alone. Healing then takes place with a good result as in ripe cataracts except that layers of transparent cortex are apt to remain adherent to the capsule during the operation. This afterwards becomes opaque so that an after cataract or secondary cataract is formed which requires a secondary operation [needling.] Fortunately in many instances the cataract in one eye is much more advanced than that in the other so then no such trial as mentioned above need be passed through. When there is mature cataract in one eye, with very good vision in the other eye as 6/5 or 6/6, where there is no opacity in the lens or fundus lesion, this has to be looked upon with suspicion. Such cataracts generally result from trauma, detachment of retina or fundus lesion. Operation should not be done except for cosmetic purpose, that is to give the pupil its natural hue again. I have only seen one such case done at the request of a lady patient. If in the second eye the cataract is incipient or even when the eye be quite normal the extraction may be done in the mature one if uncomplicated, as it will be a reserve for the future, and it will retain all its functional capacity although it never wears a convex lens. The aphakic eye in this case cannot be corrected by a corresponding convex glass as binocular vision cannot be maintained. If we had left the cataract with the idea of not operating upon it until the vision was reduced very much in the other eye, we may perhaps be obliged to operate upon a very hypermature cataract under unfavourable conditions.

The recognised method in the ancient ages was couching which is still practised by some Mahomedans and Hindus from North India who go touring throughout the year over different parts of India whose fee is very cheap a rupee or two and a fowl, a few drops of blood of the latter the Mahomedan pretends as being used for the operated eye for the healing of the wound whereas the fowl is killed and the blood is taken near the eye so that the patient and relations may not note the wound bleeding caused by the

needle. The immediate result was of course satisfactory as regards the improvement in vision, but subsequent trouble nearly always arose from irritation set up by the displaced lens and by the entry of micro-organisms through the unsterilized needle and dressings, the eye was eventually lost by *iritis*, *glitis* or *glaucoma*.

The French Dr. *Daniel* in 1745 inaugurated a new era in the history of cataract operations. Since from that time, the extraction of cataract began more and more to take the place of depression or couching. *Beer* and *Vongrafe* improved it. *Grafe* thought that *Beer's* section gave rise to great gaping of the incision, in consequence of which the lips of the wound were not applied properly to one another. And this fact was supposed to be the cause of suppuration. *Vongrafe*, as he was practising the linear extraction and he was convinced by the promptness with which the wound healed he introduced the curved incision.

(To be continued).

* ABNORMALITIES OF MENSTRUATION.

BY

U. S. JAGADISAN, L. M. P.

Medical Practitioner, Madras.

Amenorrhea.

Amenorrhea or absence of menstrual discharge is a condition accompanying a multitude of affections. It may be conveniently classified as follows:

1. *Primary amenorrhea* wherein menstruation never appears or fails to appear at the usual age.

2. *Secondary amenorrhea* wherein the menstruation appears and then suppressed.

Primary Amenorrhea.

Causes:—

1. Physical obstruction preventing the escape of blood.

(a) Imperforate hymen.

(b) A congenital or acquired occlusion of the vagina.

(c) The occlusion of the Os Uteri.

2. The absence of the Uterus or rudimentary one.

3. The absence of Ovaries or a rudimentary stage.

4. The infantile condition of the Uterus and Ovaries throughout life.

5. The absence of these Ovaries and other appendages on one side.

Specially contributed to the *Antiseptic*.

N. B.—The atresia of the vagina may be brought about by:—

1. Specific fevers such as typhoid.

2. The sloughing of the vaginal wall.

3. The granulating surfaces cohere as to close the canal.

Treatment:—

Amenorrhea due to atresia with collected menstrual secretions above, is the only form which demands immediate action, and this form is not a true amenorrhea at all, though it is considered under this head.

Remove the causes by operative methods. If amenorrhea is due to congenital defects, no treatment is indicated.

Secondary Amenorrhea.

Causes:—

(a) 1. A bad state of general health.

2. Chlorosis.

3. Over-work especially in-doors.

4. Severe illness.

5. Organic diseases, such as Tuberculosis.

(b) 1. Deficient ovarian activity with which is coupled amenorrhea seems to be the cause of the failure of general health and the resulting chlorosis.

Note.—There is a close relation between the functions of the ovaries and the uterus. If the ovaries are removed, menstruation stops. Besides, the activity of the ovaries gives a vast impetus to the general nutrition at the age of puberty. If it is sluggish, general health fails. Deficient activity of the ovary, and thereby amenorrhea may both conjointly bring about a condition of 'Plethora'.

(c) Climate tells much upon the various constitutions.

(d) Morbid conditions:—

1. Ovarian tumours, Sometimes, however, there is Menorrhagia in such cases.

2. Pelvic inflammation (Perimetritis and Parametritis) Menorrhagia may also occur in these cases.

3. Exposure to cold during menstruation. It is very apt to lead to pelvic peritonitis and hence amenorrhea. Cold may stop the flow, even if it does not set up inflammation.

4. Ovaritis.

5. Superinvolution of the uterus.

N.B.—Amenorrhoea may be physiological during pregnancy and while suckling.

In some cases, amenorrhoea is functional. Excitement, shock and sudden fright will tell upon delicate constitutions, and will act to cause menstruation to be delayed or missed altogether. Over study and exhaustion of the nervous system are also frequent causes of functional amenorrhoea.

Treatment—

If due to cold, give a hot hip bath with mustard in it. If pain exists, use a morphia suppository (Gr. $\frac{1}{4}$)

N. B.—Beware of Pelvic Peritonitis if the suppression of menses is sudden. Attend to general health.

Nourishing food and plenty of fresh air are essential factors in the treatment. Great attention must be paid to keeping bowels open by giving saline purgatives.

If due to chlorosis, fresh air, sunlight, exercise, nutritive food iron and laxatives are indicated. Intervals of rest should also be given. Meat juice (Valentine) is also useful. Sunlight and fresh air form an essential item of treatment. Tonics, Cod Liver oil and iron are useful. Carbonate of iron in the shape of Bland's pill is also efficacious

R/ :—

Liqr. Ferri Perch	...	...	...	...	mx
Tinct. Nucis Vomica	...	...	...	...	mv
Mag. Sulph.	...	...	...	...	3j
Spts. Chloroform	...	...	...	...	mv
Tinct. Gentian co	...	...	...	...	3i
Aqua ad	...	...	...	...	3i

T. D. S. after meals.

The above recipe is also useful. If iron fails, try with small doses of arsenic, one or two drops of Liqr arsenicalis thrice a day after food. Manganese dioxide may be somewhat useful. A course of chalybeate or arseniate waters is sometimes useful. Hæmoglobin may also be tried. In some cases, the administration of Permanganate of Potash Gr. 1 to Gr 2 thrice a day is useful. In cases combined with Chorea arsenic is the best remedy. For headaches, coal-tar preparation and bromides are useful. If due to Tuberculosis, treat for tubercular affections.

If due to severe illness, it is regarded as a blessing, since the absence of menstrual flow is nature's effort to conserve strength. No treatment is necessary except to general health.

The functional amenorrhoea requires no treatment at all except sufficient rest and composure.

N. B.—The application of Lysol douche is somewhat useful and also relieves pain. The daily application of one ounce of Mag. Sulph. tied in a piece of sterilized linen, into the vagina, touching the external os uteri, for 3 days, and then douching the vagina with Lysol lotion, brings about the flow of menses in some cases.

Finally, rest, fresh air, and nutritive foods are essential.

For morbid conditions, remove the cause by operative methods and local treatment.

OUR CONTEMPORARIES MEDICINE.

The taking of Quinine.

A young lady, who gave a history of quinine intolerance on two occasions, after 5 gr. of quinine bihydrochloride by the mouth, suffered from shortness of breath, œdema of eyelids and urticaria, with a recurrence after 4 gr. by rectum. Uterine hæmorrhage also took place, but whether this was attributable to quinine is not stated. After 30 gr. doses of calcium chloride the quinine intolerance diminished and later 3 intramuscular injections of 7½ gr. in 24 hours had no untoward effect.—*Lancet*.

A case of Rat-bite fever treated successfully by injections of Novarsenobillon.

BY

GEORGE C. LOW, M.A., M.D., AND R. P. COCKIN, M.A., M.D.

**Rat-bite fever*—Sodoku of the Japanese—is a comparatively rare disease. It was recognized, quite a long time ago now, by Miyake and others in Japan as a definite entity. Cases have also been reported in England (Middleton, Horder, Cruickshank), in the United States of America, in France, and in Italy (Frugoni). As far as we are aware, our case is the first reported from East Africa or the tropics proper. The finding of the causative agent is of recent date. In 1915 Futaki and his fellow-workers demonstrated the presence of long spirochaetes in the lymph glands of cases on the tenth to thirteenth day of the illness. Later they discovered in man, in the wound

there never was any suspicion of syphilis, the history of the bite, the way the symptoms developed after it, the typical nature of the eruption, and the relapses all being characteristic of rat-bite disease. The same remarks apply to trypanosomiasis, which had to be considered in the differential diagnosis. In addition, no trypanosomes were found in the blood, and the eruption was not the same as is met with in that disease.—*B. M. Journal.*

Possible Pitfalls in Life Assurance Examination, And Remarks on Malingering.

BY

F. PARKES WEBER, M.A., M.D., F.R.C.P. (LOND)

EXAMPLES OF DISEASE WHICH MAY ESCAPE DETECTION AT LIFE ASSURANCE EXAMINATIONS.

Arterial Hyperpiesis, with or without Granular Kidneys.—It is certainly quite easy at a single examination to overlook a case of hypertension if one does not employ the sphygmomanometer, even when the brachial systolic blood pressure is as high as 190 or 200 mm. Hg. Here we have the grave risk of premature death from such cases as cerebral hæmorrhage, etc. In many cases the urine may be found on repeated testings to be free from albumin, and tube casts may be absent, or only one or two hyaline casts may be discovered by the help of the centrifugal machine, as they may be sometimes in the urine of healthy persons. Ophthalmoscopic examination may likewise show nothing abnormal in this class of cases. The heart may not appear enlarged by ordinary examination, notably in fat or fleshy subjects; moreover, a moderate amount of pulmonary emphysema may mask hypertrophy of the left ventricle.

Disease of the Myocardium or Coronary Arteries of the Heart in Syphilitic Subjects.—In early cases, without knowing the subjective symptoms, one may easily overlook disease of this nature at a life assurance examination. Moreover, a history of past syphilis may not be forthcoming. The Wassermann reaction is not likely to be taken. A first attack of angina pectoris may be fatal. Other grave symptoms of myocardial disease may suddenly develop in young or middle-aged individuals. Sometimes considerable areas of the cardiac wall undergo degenerative changes owing to obstruction in their supply of arterial blood, and then death is likely to occur rather suddenly before a true cardiac aneurysm has developed.

Malignant tumours in the thorax or abdomen may easily be overlooked in any early stage of their development, especially at a single examination. Symptoms regarded as connected with chronic dyspepsia may signify commencing cancer of the stomach. In some cases the persistent

absence of free hydrochloric acid in the contents of the stomach after a test breakfast might have furnished valuable evidence as to the nature of the case, though it must be admitted that free hydrochloric acid is probably more often absent in non-malignant conditions than is ordinarily supposed. It is not surprising that an operation for a malignant tumour in the abdominal viscera may occasionally be heard of in *bona fide* cases not long after acceptance for life assurance, even when there was no suggestion of a tumour being present at the time of the life assurance examination.

Disease of the suprarenal glands, notably primary malignant disease (malignant hypernephroma), may escape recognition at first. Tuberculous disease, with caseous degeneration, in one or both glands, is often not recognized, even if there are asthenic symptoms, before the characteristic cutaneous pigmentation of Addison's disease has developed. The following case bears on the question of the difficulty in the diagnosis of "latent Addison's disease," with asthenic symptoms and delayed recovery from infections, before the typical cutaneous pigmentation has developed.

In December, 1899, I saw a man aged 24 suffering from a pyrexial attack, which was regarded as influenza. The illness was accompanied by some pleurisy at the left base and was followed by remarkable debility. Several medical consultations were held, and gradually he apparently recovered. In 1901, when shooting in India, he was attacked by malaria, probably not a particularly severe attack, and was sent up to the hill station of Darjeeling. There his condition was one of great asthenia without fever, and he had syncopal attacks, in one of which he died. Some pigmentation was observed in India, though none had been noted during the illness in England. A most careful *post-mortem* examination was made, and in a report sent over to a life assurance office in England it was stated that the suprarenal glands contained yellow caseous material and calcareous plates, and were matted together across the aorta. It seems to me that suprarenal disease (latent Addison's disease) was probably the true explanation of the asthenic condition connected with convalescence from the previous illness in England, and was perhaps also present when his life was heavily assured at ordinary rates by a great English Life Assurance Company before the illness in question. More than one English company was affected by his early death.

Cirrhosis of the liver is sometimes very hard to detect, especially in fat or apparently well-nourished persons, with thick abdominal walls which make palpation of the liver or spleen difficult. In such cases the disease, though it may have had an ordinary alcoholic origin, may be not only quiescent, but also actually latent. When the abdominal walls are thin or flabby, the hardened liver generally seems enlarged to palpation, even when it is in reality more or less atrophic. Evidently the position of the liver is changed in such cases, for the lower margin can usually be felt projecting

below the costal margin. Slight enlargement of the spleen can often likewise be made out, and this, together with an occasional subicteric tinge of the conjunctivæ, and perhaps (when present) relatively dark-coloured urine, and excess of urobilin in the urine, may facilitate the diagnosis.

Splenic Enlargement.—Every medical examiner knows the difficulty in regard to slight chronic enlargement of the spleen, when the enlargement is not certainly the result of malaria. I suppose no candidate for life assurance with great enlargement of the spleen would be accepted, whatever the nature of the enlargement might be. I may draw attention here to a certain rare class of cases of splenomegaly. A young woman, or a young man, suddenly complains of considerable pain in the upper part of the abdomen, possibly accompanied by temporary fever and a little ascites. The ascites soon disappears, but the spleen is found to be enlarged, and there is probably slight anæmia. Soon the pain passes off, the patient feels well, and there may be no anæmia, but more or less enlargement of the spleen persists. In some cases there may be a little early hæmatemesis. Later on the patient may seem and feel as well as any healthy person, in spite of the persistence of the splenomegaly. After a year or two the blood count will probably show nothing abnormal excepting moderate leucopenia. For the clinical aspect of the case at this stage I have suggested the term "*anaemia splenica sine anæmia*." Sooner or later, however, grave hæmatemesis is likely to occur, and the case will then probably be diagnosed as one of splenic anæmia or Banti's disease. But in this class of case, as *post-mortem* examination shows, the real cause of the splenic enlargement, hæmatemesis, etc., is a kind of pylephlebitis adhaesiva, with resulting obstruction in the splenic and portal veins. The obstruction to the return of blood from the spleen may become compensated, and the disease may remain quiescent for a long period, but fresh attacks of thrombosis in the portal vein are apt to occur, ultimately leading to complete obstruction. There may or may not be a history of traumatism at the commencement of the disease, and the etiology of the thrombo-phlebitis in these cases has not been satisfactorily explained.

Pulmonary Tuberculosis.—I need scarcely mention the well-known danger at single life assurance examinations of failing to recognize the presence of early pulmonary tuberculosis, especially when, for one reason or another, the medical examination is somewhat hasty or incomplete. Early cases are by no means always the most favourable cases of pulmonary tuberculosis. Apart from the general nutrition and build (and possibly the family history) there are no data at first to help one to form an opinion as to how the disease is likely to progress or how efficient ordinary hygienic and therapeutic measures are likely to prove to be. On the other hand, in old cases, and after the disease has been under observation for a considerable time, the resistance of the patient has been more or less estimated. When a

person is not overwhelmed by the disease, even when it has considerably progressed, the power of gradually acquired resistance and compensation may prove to be tremendous. A man may be slowly "chased through life" by the disease and yet live to a fair, or even old, age. The disease, although very advanced and after extensive cavernous formation has taken place, may ultimately become quite quiescent or obsolete, and death may occur from other causes.

In September, 1909, I saw a gentleman (W. M. M.) with extensive cavernous signs over the upper part of the left lung, back and front. He was 67 years old, but looked rather younger. Cavity formation had occurred, according to the history, in the upper part of the left lung after an attack of measles at the age of 16 years. At 38 years of age he is said to have had a bad "cold" so that "the hole in his left lung got disturbed," and the pulmonary tuberculosis became active again. Since that time he had been much abroad, in Egypt, Malta, the West Indies, and Madeira, but especially in the Canary Islands. For some time he had had a house near Las Palmas in Grand Canary. A tragical complication for the patient was the death of his wife (to whose devoted attention he owed so much) by suicide, a few months before I saw him, in 1909. He died at Pau in January, 1913, aged 70.

Diabetes Mellitus.—When diabetics are passed in life assurance examinations the most probable reason is neglect or mistake in urine examination, but it must not be forgotten that by means of the modern fasting treatment the urine can often be rendered temporarily free from sugar in the case of young patients (often apparently well nourished), precisely those who are almost certain to die early from diabetic coma. Such cases would, I believe, often be passed, if fraudulently sent up for life assurance examination after a preparatory course of fasting treatment. In 1909, before the general introduction of the treatment of diabetes mellitus by Allen's fasting method ("alimentary rest"), the urine in a grave case under my care was temporarily freed from sugar in the following way:

The patient was a young woman, aged 23 years, an in-patient at the hospital. The sugar in the urine was reduced by dieting to about 70 grams for the twenty-four hours. On September 10th, 1909, the diet was temporarily limited to 200 to 300 grams of olive oil in the day, with as much water as was wished, and a codein-phosphate pill (which the patient had been taking three times a day) was continued. As a result of this "disguised starvation" method sugar completely disappeared from the urine on September 12th. On September 13th I ordered a return to the special diet which she had previously been having for her diabetes, and on the next day the urine was found to contain 4.5 per cent. of sugar. During the days of exclusive olive oil diet the patient did not feel hungry or as if she was being

starved. Once or twice the oil, she stated, made her feel a little sick, but she looked well and had her usual, somewhat florid, complexion. She lost only about 4 lb. in body-weight. She was not emaciated, and on the whole, gained weight whilst she was in the hospital.

This case was certainly one of grave diabetes mellitus, and afterwards died, as I heard, from diabetic coma, but surely a life assurance examiner, had he examined her when the sugar disappeared, might have been deceived.

Syphilis and So-called Parasyphilis of the Nervous System.—Nervous syphilis is supposed by some to have become relatively more frequent since the introduction of the methods of treatment by salvarsan and neo-salvarsan. The blood serum and cerebro-spinal fluid are naturally very seldom (if ever) tested, regarding the Wassermann reaction, for purposes of life assurance, and it is quite possible that persons actually suffering from headache, etc., connected with the commencing nervous syphilis, may occasionally be accepted for life assurance. Future statistics of the great life assurance companies as to the causes of death in early claims will doubtless throw some light on these questions. Similarly, persons with commencing tabes dorsalis or general paralysis must sometimes be unwittingly accepted for life assurance—especially if no history of previous syphilis is forthcoming. I doubt whether as yet Argyll Robertson pupils are sufficiently examined for and the knee-jerks tested as a routine part of life assurance examinations. But occasionally at (several) repeated examinations knee-jerks cannot be elicited in neurasthenic, and even apparently quite healthy, individuals. One must acknowledge that tabetic symptoms, such as tabetic pains, tabetic paraesthesiae, gastric crises, and tabetic urinary troubles, are frequently supposed to be due to other causes. It may be noted, however, that patients with tabes dorsalis often live a long time, and in some cases the life assurance companies would not be losers if tabetics were accepted by mistake. Tabetics in whom optic nerve atrophy occurs early seem often to have a relatively mild form of the disease in other respects—so much so that, I believe, in France, about Charcot's time, a kind of "arrested tabes dorsalis with blindness" was spoken of—that is to say, a class of tabetics was recognized whose symptoms (that is, the progress of their disease were arrested by (or, rather, after) the development of optic nerve atrophy.

MAJINGERING.

Knowledge in regard to the simulation of symptoms and diseases is of extreme importance for workmen's and accident assurance. The combination of simulated with genuine signs or symptoms is often especially difficult to detect. Functional nervous diseases and simulation of organic diseases are not rarely associated with each other. The artificial skin affections which I have seen have been chiefly in young women with abnormal psychical states.

Unfortunately in these cases as in other cases of artificially produced disease, though the artificiality of the disease may often be recognized, the exact means whereby the condition is produced frequently escapes detection.

Most of us recently have had to pay attention to the question of various forms of simulation in men. Amongst prisoners of war simulation of disease for purposes of repatriation tends of course to be regarded as fair play, and as rather creditable than discreditable, if it is successful. In such persons, however, as in accident insurance cases and "traumatic neurasthenia" there may be a real functional nervous element combined with the simulation of disease. In some cases a functional nervous disease may constitute the chief trouble, not combined with actual simulation, but fostered by a desire not to recover until liberty is regained, just as ordinary traumatic neurasthenia may be kept up and fostered by a desire to obtain monetary compensation, etc.

An intelligent and highly skilled business man, aged 36 years, had right hemiparesis and what seemed to be a kind of myoclonus (paramyoclonus) multiplex. He could not speak, except in a whisper and could not walk. He was allowed by the military authorities to return to his native land, and I afterwards heard that not long after his return sudden recovery of speech and power of walking followed the shock of a fall from a tram-car.

This reminds me of some remarks in a recent paper by E. Farquhar Buzzard, in the course of which the author stated that he mistrusted the complete genuineness of many of the reported sudden recoveries from functional nervous disorders (including functional loss of speech, etc.), following—that is, a result of—shocks. He suspected that the patients began to be tired of their loss of speech, etc., and began to be sure that their trouble was no longer really necessary, he thought that they then gladly accepted some "shock" or other exciting circumstances as a kind of "excuse" to recover suddenly. I wish some beneficial shock had "occurred" in an aggravated case of "chorea rhythmia" (functional) which was under my care for a long time.

The patient was a man, aged 38 years, of Hebrew origin. When he was being examined by a doctor, the rhythmic movements of the neck and arms used to become increased in rate and amplitude and force. They quieted down somewhat when he was left to himself, and ceased altogether during sleep. They became more violent when any one tried to restrain them by force in any way. He said he could not walk, but he was able to move his lower extremities when he was sitting or lying down. He gave one to understand that he could speak only in a very slow and jerky manner, as if battling against some obstruction in articulation. On the other hand, he could eat, drink, and dress himself fairly well, when left alone, without any assistance. He was at first not losing weight, but afterwards he lost slightly. He was

apparently free from any visceral disease. His knee-jerks were exaggerated; no ankle clonus could be obtained; his plantar reflexes were difficult to obtain, but, when obtained at all, they were of the flexor type. Obviously psychical factors played an important part in the case. The patient was removed to another hospital and I lost sight of him, but perhaps he has been allowed to regain his liberty, and in that case rapid improvement may have taken place.

In some cases I believe it is very difficult to distinguish between what one might call *bona fide* functional paresis (with limping on one lower extremity) and actual simulation, and equally difficult is it to distinguish between genuine painful remnants of sciatica and simulation.

A remarkable case of simulated amblyopia was complicated by a temporary attack of genuine optic neuritis. An intelligent man, aged about 45 years with special knowledge of chemistry, was repeatedly examined by two ophthalmic experts, and there can be no doubt whatever that typical optic neuritis was actually present for a time; it could not have been simulated. He, however, apparently managed, for purposes of simulation, to have his pupils generally under the influence of atropine, but occasionally, when examined unexpectedly, his pupils were found to react to light. On an occasion later on, when he met one of the eye doctors unexpectedly, he committed the involuntary mistake of addressing the doctor, before the latter had spoken or given the patient any opportunity of recognizing him, except by sight. As to the possible causes of the attack of true optic neuritis in this case it may be remarked that the patient's blood serum gave a positive Wassermann reaction, that he complained of (possibly genuine) headaches, that he was given antisyphilitic treatment, and that the Wassermann reaction afterwards became negative. One day the specific gravity of this patient's urine was found to be 1057, which I think was probably due to some common table salt having been emptied into it. It is quite possible that the patient had noticed that on ordinary urinometers used in England the portion of the scale above 1030 is marked "diabetes" on the reverse side. Owing to this curious statement perpetuated on nearly all these instruments, as used by doctors and in hospitals, the idea may suddenly have occurred to him that by artificially raising the specific gravity of his urine he might simulate an important symptom of diabetes mellitus. If so, he probably gave up the idea when he found that, owing to the absence of sugar from his urine, the disease in question could at once be excluded.—*B. M. Journal*.

Iodine in Influenza.

DR. W. THOMAS writes:—I note with pleasure in your last issue that Dr. Andres Sobrino of Madrid speaks enthusiastically of the efficacy of the tincture of iodine in influenza. The authorities of a dimmer therapeutic age

than the present condemned it as unsuitable for internal administration because of its liability to produce iodism. There never was a greater error, but such is the power of tradition that when I try to persuade my brother practitioners to use it I am speaking to deaf ears. For many years I have prescribed the drug extensively in many conditions, and I owe much of the success I have achieved as a practitioner to its efficacy. The pharmacopoeial dose is practically useless; it must be given in doses of from 10 to 60 minims, well diluted. I have often taken 3j in a tumbler of water, and have averted many a threatening cold of an attack of influenza by so doing. It is excellent, combined with an alkali, in acid dyspepsia. I have never known it to produce the bugbear "iodism," and my own experience fully justifies Dr. Sobrino's enthusiastic praise. It is one of the best drugs in the *British Pharmacopoeia*, either externally or internally used.—*B. M. Journal*.

Acidity of Tears a New Sign of Death.

Prof. Lecha-Marzo—Brissemoret and Ambard, in 1904 observed that the abdominal viscera, especially the liver and spleen, became acid in reaction soon after death. Realizing the importance of this acidification of the body fluids as a sign of death, Prof. Lecha-Marzo of Seville has studied the reaction of the lacrimal secretion. The method of procedure is simple. A piece of ordinary neutral litmus paper is placed in contact with the globe of the eye beneath the eyelids, to which light pressure is applied. In the living subject the reaction is distinctly alkaline as indicated by a blue color, while after death the color of the test paper is either unchanged or becomes distinctly red. The writer's researches show the simplest test which has been devised for the detection of death, but affords earliest information that death has occurred. During life the reaction of the tears is distinctly alkaline. After death this alkalinity rapidly lessens and becomes neutral till it passes into definite acidity, which again may give way to alkalinity when putrefaction occurs. The important fact is that the reaction of the tears is never acid during life. This reaction is rapidly developed, and is often obtained within half an hour after death, and always within eight hours. Its rapidity of development depends on the temperature of the air, but that of an ordinary room it usually appears within a few hours. An examination of 1,079 healthy persons of both sexes and 1,104 others suffering from various pathological conditions of the eyes showed without exception an alkaline reaction of the tears.—*The Medical Review*.

Treatment of Gangrene of the Lung by Induction of Pneumothorax.

de Verbizzier and Loiseur.—The treatment of gangrene of the lung by induction of pneumothorax was introduced recently by Weil ("REVIEW,"

p. 17). The following case bears out Weil's claim that the method is efficacious in a disease previously disappointing to treat.

A young soldier was admitted into hospital on July 13, 1918, with a severe attack of influenza, complicated by pneumonia on the right side. The temperature was 102.2° , and the disease ran the usual course until July 21, when the breath and sputum became horribly foetid and there were signs of the cavity at the base. The general condition became worse and the temperature ranged up to 104° . On July 24 radioscopy revealed consolidation of the lower lobe of the right lung with a cavity in the centre into which the right bronchus passed. Different views showed cavity was about the same distance from the anterior as from the posterior wall of the chest. Its lower border was some mm. higher than the arch of the diaphragm, which was acting normally. Pneumothorax which induced under the control of the screen and 200 c.c. of air were introduced into the pleural cavity. At the end of the insufflation the manometer showed a pressure of + 1, and radioscopy revealed that the lung was separated from the diaphragm and chest wall by a finger-breadth. However, the pulmonary cavity had not sensibly diminished. Nevertheless the pressure exercised by the pneumothorax seemed immediately to have a good effect on the evacuation of the cavity. For an hour the patient easily expectorated a large quantity of pus, and on the following days all the symptoms improved, except the foetor of the sputum, which was always extreme. The improvement was only temporary, and on the 28th radioscopy showed that the pneumothorax was partially absorbed. A greater insufflation (800 c.c.) was performed, giving a manometric pressure of + 4. The screen then showed marked compression of the cavity, which was diminished in all dimensions. All the symptoms immediately improved. Some hours after the induction of the second pneumothorax a large quantity of pus was expectorated, and on the following day the sputum was much diminished. In the following week the foetor progressively diminished, and cavity was completely drained. Appetite was then regained, and convalescence began. After 3 weeks recovery was complete. During this time radioscopy showed diminution in the size and transparency of the cavity and disappearance of the liquid. A fortnight after the operation *restitutio ad integrum* of the lung was found. During this time the pneumothorax was completely absorbed and the diaphragm moved normally.

In this case the cavity was being drained by the inferior right bronchus, but insufficiently, for the patient was getting worse. The radioscopy examination suggested the advantage of improving the drainage by producing a positive intrapleural pressure, which proved successful. This is the best treatment for pulmonary gangrene, but success depends on certain anatomical conditions not always present. The pleura should be free from dense adhesions, the lung should be compressible, and bronchial drainage cavity

should be sufficient. It would be dangerous to compress strongly a collection of which the sole exit was a narrow bronchus. To appreciate these conditions and to supervise the treatment radioscopy is indispensable.—*M. Review.*

The effect of Influenza on the heart.

Prof. Schott.—The writer, who is a Naueim physician, and who has studied the effects of influenza on the heart in the epidemic of 1889—1892, as well as in the recent epidemic, insists that, with the exception of rheumatic fever, no disease leaves so many cases of heart disease behind it as influenza. Influenzal heart disease often takes the form of endocarditis; (and the writer found that acute endocarditis was responsible for the abnormally high death rate in the recent epidemic. The writer has, however, never seen a case of primary pericarditis in influenza; but in one case inflammation of the pleura extended to the pericardium, inducing transient heart failure. He has also been unable to attribute a single case of myocarditis, to influenza; the numerous cases of myocarditis occurring during epidemic were observed in patients who had suffered from dysentery, typhoid fever or syphilis, or were addicted to alcohol or tobacco, any of which might alone account for the myocarditis.

A striking feature of the action of influenza is a simple dilation of the heart, the boundaries of which are extended on one or both sides. This is accompanied by dyspnoea, a sense of oppression, giddiness and general weakness. Factors contributing to the development of this condition during a bout of influenza are mental and physical over-exertion and rapid emaciation. There is definite relation between simple cardiac dilatation and the rapidity of emaciation. In the epidemic of 1889-1892 the heart sounds were not so often weakened as during the recent epidemic. This may be due to war conditions, the over-distention of the digestive organs by war bread and other bulky and indigestible food substitutes having displaced the diaphragm upwards and thus embarrassed the action of the heart. When the cardiac symptoms are grave, the blood pressure is usually very low, but in a few cases it may be abnormally high as a result, no doubt, of changes in the nervous system. Both motor and sensory heart neuroses may be provoked by influenza. Bradycardia and a small, soft pulse are of ill omen when found early in an attack of influenza. To prevent the cardiac collapse which is so common, the writer recommends the application of heat to the heart for 8 to 10 minutes every, or every other, hour; injections of camphor and caffeine are also beneficial. Alcohol he prescribes in the form of old sherry, given frequently in small doses. The patient must not leave his bed early or go out in cold weather, lest a weakened heart should suddenly fail.

THERAPEUTICS.

Pilocarpine in Alopecia.

Dr. Pringle reports the case of a patient who entirely lost the hair of his scalp, and in whom vigorous local treatment had altogether failed. Pilocarpine nitrate one-sixth grain, was then injected into the scalp hypodermically. In a week there was a growth of downy hair over the scalp. The dose was increased to one-third grain with satisfactory results.—*Critic and Guide*.

Iodine in Varicella.

BY

CHARLES CORBEN, M. D., F. R. C. S. E.

One of the worst effects of chicken-pox is the scarring, particularly on the face. These scars are invariably caused by the pocks becoming secondarily infected; irritation is set up, and the patient cannot refrain from scratching, with the result that a permanent scar is formed, and the course of the disease greatly prolonged.

For some time past I have made it a rule to treat all these cases with iodine. From the first I give instructions that every vesicle shall be painted twice, or at least once a day with tincture of iodine, applied with a small camel-hair brush. The result fully justifies the slight trouble involved, for not only is secondary infection prevented, but (perhaps in consequence) the itching, which in some cases is so intolerable, is almost entirely prevented; the pocks heal more quickly; the duration of the disease, and so the infectious period, is materially shortened; and scarring is entirely absent if the treatment is conscientiously carried out.

I always advise that not more skin than possible be painted, only the vesicles themselves; I have not seen irritation set up even in cases with a large number of pocks.—*B. M. Journal*

Pediculi of the Eyelashes.

BY

A. A. HILL, M. D.

The following note may be of some interest to students of parasitic skin diseases:—

L. N. T., aged 2 years, was brought to my consulting room with a maternal statement that insects were crawling on her eyelashes. On careful examination with a lens I could see on the upper eyelashes of the left eye a number of "nits" and three or four pediculi in active movement. With some

difficulty I removed a couple of small parasites which under the microscope proved to be a male and female specimen of *Pediculus capitis*. The hair was quite free from infection, and all knowledge of disease there was denied, but I strongly suspected that there had been a "spring cleaning," and that one or two ova had fallen on to the lashes, become adherent, and provided the colony I discovered.

A weak nysol solution and ung. hyd. ammon. dil. soon destroyed both parasites and ova.—*B. M. Journal*.

Liquid Paraffin for Disinfecting Needles and Syringes.

BY

RUPERT WATERHOUSE, M.D., M.R.C.P.

Liquid paraffin (*B.P.*), which boils at 360° C., is very convenient for disinfecting needles and syringes used for exploring purposes, for withdrawing blood, and for giving intramuscular injections, etc.

A simple method is to heat the upper part of a test tube three-quarters full of liquid paraffin until currents appear (indicating a temperature of about 150° C.) or rather longer, draw the heated fluid at once into the syringe until it comes into contact with the whole of its interior, and then eject it.

The advantages are the rapidity and simplicity with which complete sterilization can be effected at the bedside and the absence of deleterious effect on the needle, which, if always disinfected and cleaned in this way, never rusts, but remains patent and useful as long as it can be kept sufficiently sharp. The method is particularly useful for needles and syringes for giving intramuscular injections of mercurial cream.

Caution is needed in heating the paraffin, or it may spurt; but this is easily avoided if care be taken to move the test tube up and down in the flame whilst heating. An experience of this means of disinfection extending over six years has convinced me of its utility.—*B. M. Journal*.

Chloroform Solution of Menthol.

As an immediate and effectual antidote to the bite of poisonous insects, and especially to the mosquito bite, to prevent its infecting the system, one of our good old subscribers says, "I have great confidence in the following:—

R Menthol,	... 2 drs.
Chloroform,	... 1 oz.

Mix. Sig. Apply into and over the wound as soon as possible after being bitten, and repeat the application every ten or fifteen minutes for a short time."

"Some twelve or fifteen years ago I was bitten by a mosquito on my left thumb, the bite causing at once most severe pain, as though the thumb had been pierced through with a sharp knife. In the watch pocket of my vest I had an ounce bottle of the above solution. I immediately bathed the wound with this, rubbing it in freely. It was not ten seconds until all the pain had ceased. This bite never gave me any further trouble, and from that day to this I have used this combination for poisonous insect bites with complete success."

"I always carry this vial in my vest pocket for emergencies. I believe this of special value since we have learned that the mosquito bite carries infectious disease, such as malaria and yellow fever. I believe the infected material is destroyed and the bite is rendered innocuous if the application is made promptly. I believe the combination of rare merit and great power in these cases if applied at once."—*Ellingwood's Therapeutist*.

Influence of Purgatives upon Peristalsis.

Professor Magnus has been able, by means of X-rays, to observe the effect produced by senna, castor-oil, colocynth, and sulphate of magnesia. Senna acts only upon the large intestine. Castor-oil specially stimulates peristalsis in the small intestines. Colocynth produces a copious secretion, fluid and mucous, in the small intestines and in the colon. Sulphate of magnesia has the effect of preventing the absorption of a certain amount of water by the intestines, thus producing directly a liquefaction of the faeces. No signs of irritation were noticed.—(*Therap. Monatshefte*.)

Local Treatment of Erysipelas.

Davis advises that erysipelas should be treated not only internally as an infectious disease, but also by local applications. After trying several drugs recommended for the purpose he has obtained the best results by use of the following:—

R	Acidi Carbolici	...	...	...	partes iij.
	Spiritus Camphoræ	...	...	...	partes vj.
	Spiritus Vini Rectificati	...	...	...	partem j.

Misce. Fiat pigmentum.

The large amount of phenol contained allows of deep and complete penetration into the skin rapidly and of the equally prompt destruction of the

infection without production of scarring or of pain, except a slight smarting of short duration. The camphor prevents the burning caused by the phenol, and the alcohol adds to the same effect. The solution should be applied freely with a tampon of cotton-wool over the infected area, taking care to pass beyond the line of demarcation for about three-quarters of an inch. In slight cases one application a day is sufficient; in more serious cases two or three should be made. The first application makes the healthy skin quite as red as the infected area.—(*Les Nouveaux remèdes*.)

OBSTETRICS & GYNÆCOLOGY.

A Case of Retained Menses

BY

INGHAM COWN, M.R.C.S.

The patient was a dressmaker, aged 17. She was a small, fair girl of poor physique, who might easily have been mistaken for 13. She complained of symptoms which her sister, a professional nurse, described as "her monthlies hanging about her." The usual household remedies, such as hot gin, were given; the symptoms passed off in a day or two but without any external sign. This condition of this recurred each month. The sister supposed that it was the patient's fair, bloodless condition which accounted for there being no external show. Four months later, the patient complained of a good deal of difficulty in passing urine. This was ascribed to her employment, the young women not being allowed to leave the room during working hours; so no particular notice was taken of it. Four weeks afterwards the girl returned from work and the difficulty of passing urine having resisted all their domestic remedies I was called in. I passed a catheter. After this, the retention occurred frequently, and the sister (nurse) was able to relieve her with the catheter. My attention was drawn to the large size of the girl's abdomen. I drew off the urine. The uterus could be felt externally to be about the size of a pregnant uterus at eight months. Internally the vagina was normal. There was no reason to suppose the girl to be pregnant. The symptoms generally were very vague, except the presence of this enormous swelling.

I considered the case more suited for a hospital than a working man's cottage, so I recommended the father to send her the following day to the local hospital. In the night the uterus expelled its contents and the girl passed two "chambers" full of dirty brown-black fluid. There was no pain, distress, or collapse.

The following morning the girl wanted to get up and go out, as she felt quite well; but for safety she was kept in bed a few days and the vagina was douched.

Such cases are rare, I think, in general practice.—*The Practitioner*.

The Vaginal Douche.

At the annual meeting of the North of England Obstetrical and Gynaecological Society, held in Manchester on January 18th, Dr. FLETCHER SNAW (Manchester) described three cases; (1) *B. Coli* cystitis producing intestinal vesical fistula; (2) a case of thrombosis of the mesenteric veins with symptoms simulating a twisted ovarian cyst; and (3) a case of strangulated intestine with symptoms simulating an ovarian cyst with twisted pedicle in a patient aged 42. Dr. W.E. FOTHERGILL (Manchester) introduced a discussion on the use and abuse of the vaginal douche. He took up the position that it was a curse rather than a blessing. The antiseptic douche was inferior to the methods of dry cleaning now in use when the object was to destroy pathogenic organisms; and when used without discrimination it was pernicious in several ways. The so-called hot douche, intended to reduce pelvic hyperaemia, was not used, in practice hot enough to cause the desired effect. As used it was really a warm douche, and increased pelvic hyperaemia. This was useful under certain circumstances—namely, when the absorption of inflammatory exudates had to be aided. This indeed was the only useful purpose for which, in his opinion, the douche could be used. Drs. DONALD, GEMMELL, WILLETT, and others took part in the discussion, and the opinion generally expressed was that the habit of indiscriminate douching by women is bad, that the antiseptic douche is of questionable value, and that the warm douche, used with the same objects as a poultice or hot fomentation in inflammatory conditions is useful.—*B. M. Journal*.

Corpus Luteum Extract in vomiting of pregnancy with Report of Cases.

BY

JAMES KNIGHT QUIGLEY, M.D.,

ROCHESTER, N. Y.

NOT long after reading Doctor Hirst's first paper on corpus luteum extract in Vomiting of Pregnancy, over two years ago, the writer had under treatment what to him was the most interesting of the following brief series of cases, and the first case in which he employed this treatment.

CASE I.—Miss M. M., aged eighteen, a stenographer, had had scarlet fever at fourteen, never robust and rather neurotic.

Present history: Patient first noticed yesterday (March 7th) a swelling in right groin. This proved to be a small inguinal hernia, for which a truss was secured. Two days later she began to vomit, and on the 10th rejected everything ingested. Urine analysis was normal. Patient was put to bed and various simple foods tried. She was obstinately constipated and complained of an intense epigastric burning sensation. For three weeks her condition showed little change, varying from the retention of a small amount of liquid nourishment to the rejection of everything, including champagne. She slept but little and became quite emaciated. Gastric lavage was tried to no avail, as was the entire list of ordinary gastric sedatives and antemetics. Up to this time I thought that the acute inguinal hernia and the discomfort of a newly fitted truss in a very neurotic girl might account for the vomiting, but as the truss was removed, and the patient kept in bed, it seemed as if this theory must be abandoned, and finally the suspicion of pregnancy arose, but as the mother of the patient was always present at the time of the visit, no opportunity was given for close questioning; however, after an unusually bad day for the patient, I determined to give corpus luteum a trial. On April 5th, 1 c.c. was given deep in the deltoid muscle, and this was repeated each day for four days. After the third dose the patient was retaining semi-solid food, but vomiting once or twice daily. The dose was given at intervals of two days for five more doses, the last vomiting occurring on the 20th. The treatment in this case served as a diagnostic measure. Confirmatory evidence of pregnancy was obtained later, the patient admitting that her last menstruation occurred on January 7th. This case, though extremely neurotic, was not cured by suggestive therapy, for nothing was guaranteed to the patient from the employment of corpus luteum.

CASE IX.—L. W., aged twenty-five. First seen about ten weeks after last menstruation. Has vomited severely for one week. After a period of moderate nausea of four weeks' duration corpus luteum, gr. v. per month, three times daily was given with a cessation of both nausea and vomiting in two or three days, and no return.

CASE XII.—R. W., aged thirty-five. Last menstruation September 30th. First noticed vomiting November 15th. Three injections were given in December, for vomiting, with relief. In January a salivation developed, so profuse and annoying that the patient was obliged to remain at home. This symptom I believed to be of the same origin as nausea and vomiting; accordingly, one dose of corpus luteum was given daily for four succeeding days, with complete relief, much to the gratification of the patient.

CASE XVI.—J. M., aged twenty-one, a primipara. Last menstruation December 18th. Nausea and vomiting began January 20th, at first in the morning, gradually increasing in severity until about February 28th, when she went to bed and was on a limited diet for a week. Vomiting stopped, but returned upon her leaving her bed. For the last six days, March 22nd to 28th, she has been in bed constantly, and retained nothing. Physical examination was without particular interest, except that she showed slight loss of weight and a dry coated tongue; blood pressure 80/130—pulse 88. The patient was sent to a hospital and kept in bed. Broth and whey were allowed and she was given corpus luteum extract injections daily, varying from one to three in number, for one week—twelve doses in all. Five per cent. glucose solution was given per rectum by the drip method in large quantities, and always retained. Sodium bicarbonate solution was for a time alternated with this, but was not retained so well. After two or three days nutritive enemata were given in addition to the glucose solution, and all nourishment by mouth stopped. In spite of the specific treatment, combined with efforts to control the acidosis, the urinary reports became more and more ominous. Her urea-ammonia coefficient ranged in five examinations from 15:1 to 5:1. The acetone and diacetic acid showed a corresponding increase, and her pulse which for a few days had been 80 to 90, going to 110, when she began to look badly and was a bit more than drowsy at this point. Therapeutic abortion was done, with marked amelioration of her threatening signs and symptoms. In this case corpus luteum was a complete failure.

Case XV.—Illustrating the efficiency of corpus luteum in a case under hospital treatment for three weeks.

Mrs. B. L., aged thirty-three. This is her third pregnancy. Suffered considerable from nausea and vomiting with two previous pregnancies, but not as severely as with the present. This patient had gradual onset, with morning vomiting, merging into the all-day type. She was admitted to the medical service of the hospital March 17th, three weeks previous to my first observation. During this time she has had various gastric sedatives, cerium oxalate bismuth, even cocaine (which she says made her worse). Various diets tried, including limitation to whey. She is very positive she cannot go through this pregnancy and thinks the uterus must be emptied. Urinalysis showed a trace of albumin, trace of acetone, no diacetic acid and an ammonia-urea-co-efficient of 20:1, a moderate degree of intoxication. Corpus luteum extract grain 1 c. c. every eight hours for six doses was given, and she was kept on liquids. After the sixth dose she did not vomit until April 12, five days after the first dose. This mild relapse was attributed to the limitation of her diet to liquids. A more liberal diet was ordered and corpus luteum resumed, one dose daily for five days. Her ammonia-urea-co-efficient went to 30:1 and she left the hospital very much improved.

SUMMARY.

Here again I wish to offer a word of apology for assuming to summarize the results of such a small series of cases, but as they correspond fairly well with the reports of other observers, I wish to add this number to the sum total.

Number of cases treated, 17.

Number of cases benefited permanently, 12.

Number of cases benefited but relapsing, 4 (not enough given).

Number of cases of complete failure, 1.

One case pruritus, (no relief).

Average number of doses, 7; had the four relapsing cases been given more at the onset as a routine there would probably have been more cases permanently benefited.

Preparation used: 1 c.c. ampoule containing 0.2 gm. desiccated substance of the gland.—*N. Y. S. Medical Journal*.

Pyosalpinx Containing a Round Worm.

C. M. Saint, F. R. C. S.—A virgin, aged 16, was admitted to hospital with abdominal pain, vomiting, and a rise of temperature. She had been ill for some days. The pain was in the lower abdomen more or less continuous. She had vomited several times. There was some pain on micturition, producing delay in commencing the act, and being rather worse towards the end of it. Menstruation was regular, somewhat excessive, and there was accompanying pain.

On examination her general condition was good, temperature of 100° and pulse of 84. There were hypogastric tenderness and some rigidity, especially in the right lower rectus. The cervix uteri was displaced to the left side, and the right fornix bulged downwards and was very tense. It was very tender on pressure. There was no discharge from the urethra or vagina. The possibility of an infected broad ligament cyst was entertained in preference to a pyosalpinx.

The abdomen was opened by a mid-line incision, with the patient in the Trendelenburg position. There were some omental adhesions and evidence of recent acute peritonitis in the pelvis. The right broad ligament was greatly distended by an egg-shaped swelling almost closing up the true pelvis flush with the brim, the uterus being pushed well over to the left side, and at this spot alone could a finger be introduced into the pelvis. The left tube and ovary appeared to be normal. The right broad ligament was incised along its upper border, and the cystic structure shelled out of its bed. As

the separation was being completed the cyst burst, and there was an escape of foul pus, and a dead round worm, $3\frac{1}{2}$ in. long. After removal of the abscess wall, a tube drain was introduced into its bed, and brought out into the vagina. The broad ligament was sutured completely up and the abdomen closed in layers without drainage. The appendix was seen quite free from adhesions, and apparently normal.

For some days there was a discharge of foul pus per vaginam, but this rapidly cleared up, and recovery was uninterrupted. The specimen proved to be a pyosalpinx.

The interesting point was the presence of the round worm. In the absence of any sign of gut or appendix adhesion, the writer is constrained to believe that it effected an entrance into the Fallopian tube through the vagina and of uteri.—*Medical Review.*

CASES AND COMMENTS.

BELLADONNA POISONING RECOVERY.

BY

B. GUBBA ROW, L.M.P.

Port Health Officer, Kundapur.

The following case is of interest in that it affords an opportunity of estimating the tolerance of a child for Belladonna, and the efficiency of morphia as an antidote.

Sometime back, one morning at 2-30 A.M. I was called to attend a schoolboy, aged five years, alleged to have been accidentally poisoned by his mother. The father's account was as follows:—At 9-30 P.M. the mother gave the child a large tablespoonful of what she took to be syrup of Senna which she was accustomed to give to the child twice a week. She then left home to see a sick relative and did not return till shortly before 2-30 A.M. About midnight the father, who slept with the boy, observed him to be breathing rapidly and was particularly alarmed at the loudness of the heart sounds. He got up and examined the boy, but was still more alarmed to find that the child could not even stand. Having been thus aroused the child became violently delirious, striking out with his fists, kicking and biting on the slightest interference with his person. On being put back to bed, he could scarcely be kept there on account of the violence of his movements. The father did his best to keep the boy quiet at last until the mother's return. When she returned and saw the state of matters her suspicion of

poisoning was aroused, and on examining the bottle from which she had given the dose, she found it to be labelled "Poison." She therefore immediately sent for medical aid.

When I arrived, I found the boy in the state described above. When left alone in bed he would not remain in it, but wandered on hands and knees aimlessly about the bed, occasionally crying out loudly. The delirium and violent movements increased when efforts were made to control him. The movements were, at no time, convulsive; the face was flushed, not cyanosed. The pupils were widely dilated and failed to respond to light. The pulse and respiration were strong and rapid, and heart sounds very loud. The boy was unable to speak. I found the suspected bottle to contain pigment Belladonna consisting of equal parts of the green extract of Belladonna and glycerine. I ascertained that the boy had not vomited.

As the evidences of Belladonna poisoning were evident, I washed out the stomach with the syphon. A good deal of the water first introduced was vomited (of a dark brown color) so that it was difficult to tell from its appearance whether it contained Belladonna extract or not. That which came through the syphon was clear. Considering that five hours had elapsed since the poison was taken I deemed it highly improbable that any of it still remained in the stomach.

After completing the washing of the stomach, I gave a hypodermic injection of $\frac{1}{4}$ gr. sulphate of morphia, and a tablespoonful of castor oil by the mouth which was swallowed. In a short time the boy was quiet, and I left the house having directed the parents to send for me should any further alarming symptoms arise.

I was unable to see the patient again until 11 A.M. Then I ascertained that he had slept well till 10, and on awakening still exhibited symptoms of the same kind but less aggravated. The delirium was now of a hilarious character, somewhat resembling drunkenness. The child laughed and chatted about his school experiences, games, fights &c. The bowels had not yet moved. I then gave another injection of $\frac{1}{4}$ gr. sulphate of morphia and 3 grs. calomel by the mouth. The boy did not again sleep till 11 o'clock. During the whole of that day somebody had to remain constantly at the bedside to keep him in bed. Several times he attempted to bite those who tried to control his movements. Although the mouth was very dry and the tongue was constantly rolled about, the boy refused food or drink and spat out whatever was introduced into the mouth.

At 2 in the afternoon the bowels not having yet moved, a soap and water enema was given after which, there were 3 or 4 liquid motions. The boy continued in the same mental state till about 11 P.M. when he fell asleep.

Shortly after 11 P.M. I visited the patient and finding him sleeping thoroughly, I judged it best not to do anything. He had a good night's rest. The following morning at 10 I found him awake and presenting no abnormal symptoms, except dilatation of the pupils which persisted for four days. No rash at any time appeared upon the body and there was no peeling of the skin. After recovery the boy seemed to have no recollection of the incidents which occurred during his recent illness.

This case may be regarded as illustrating two points, the one necessarily inversely as the other:—

- (1) The tolerance of the child for Belladonna, and
- (2) The efficiency of morphia as an antitode.

The dose swallowed was certainly a large one. The chief alkaloid in Belladonna is now believed to be hyoscyamine (0.5 to 0.9 p.c.) not atropine. These alkaloids are isomeric, and it is considered probable that atropine is a conversion product of hyoscyamine. Extract of Belladonna is estimated to contain about 1 p.c. of alkaloids. The pigment contains 50 p.c. of the extract. In this instance fully half an ounce of the pigment, i.e., two drachms of the green extract were taken, representing about 1 gr. of the alkaloid. The medicinal dose of both alkaloids is from 1/200 gr. to 1/100 gr. The fact that the patient remained untreated for five hours without exhibiting the extreme symptoms of poisoning by the drug points to a remarkable tolerance. Taylor quotes as remarkable a case in which a woman recovered after swallowing three drachms of the extract; but although emetics were administered successfully she did not completely recover till five weeks had elapsed. In the case under report when we consider the enormous dose and the great probability that it was all absorbed, it would seem that tolerance alone could hardly explain the speedy recovery.

A MEDICINAL HERB

BY

C. RANGAYYA,

Sub-Assistant Surgeon, Municipal Hospital, Nellore.

Telugu Name—Vakudu Chettu. Found all village tracks. వాకుడు చెట్టు.

Parts useful—Seeds from well ripe fruits.

Characteristics of the well ripe fruit, yellow, of the size of a marble. Seeds resemble almost the 'brinjal'—వంకాయ (Telugu Name) The fruits belong to the same species as brinjals—but it is different from 'Molakkaya' మోలక్కాయ. The herb is thorny.

There was a small gap between two teeth of mine (left upper molar). The food used to get lodged. Soon after meals I would prick and remove the particles with a pointed broomstick. This habit continued for a year. In May last I found one of those teeth carious and a cavity with nearly a third of an inch in depth.

Mastication on the affected side was absolutely impossible. Cold water could not be drunk. Always hot water and hot things. Even a cold draught of air would cause the utmost agony. Sometimes sleep would be affected due to pain.

I use a brush and some tooth paste like the Euthymol of Parke, Davis. For the carious tooth, touching with creasote was useless. Touching with chloroform swab would increase the pain. As a last resort I determined to get the carious tooth removed by a dentist. Before starting, some one suggested that if the tooth be exposed to the fumes of the said seeds, ~~the~~ the pain would subside. With a palmyra leaf, a pipe was made. It was filled with the seeds. A red hot charcoal piece was placed at the open end. Through the narrow end, the fumes are smoked and retained in the mouth for a few seconds. First night there was no pain. After 4 days the pain recurred, I again smoked. It subsided. Now it is nearly 2½ months. No pain whatever; I can masticate on the side affected easily but particles collect in the cavity which come away on rinsing the mouth. I take cold water now.

I advised the use of the above seeds in the form of smoke to all my patients who come to me with pain due to carious teeth and they all found relief. I am of opinion that the smoke deadens the cells in the pulp of the carious tooth. I have kept a sufficient stock of the seeds with me and if the editor wishes to try the same upon any one, I am prepared to send the same. The smoke does not cause any harm.

THE ANTISEPTIC

NOVEMBER, 1919.

The Coming Jail Commission.



NOW that the Jail Commission has become an accomplished fact and is soon to start on its tours of enquiry it will be quite in time and place to discuss the problem of jail reforms so far as they affect the interests of the medical department. Although the prison or a house of correction for the reception, detention, discipline and reformation of offenders against the established laws of the land is a common feature of every civilised and settled government, yet in the maintenance of this painful, but yet necessary institution, the responsibilities shouldered by the state are great, rather uncommonly great. The healthy accommodation, dieting and clothing of several thousands of fallen men and women, who form the jail population are the chief duties and responsibilities, in discharging which medical men play an all important part.

From the codified laws and regulations for the administration of prisons we find that the affairs of the prison are managed by an officer designated 'Superintendent', assisted by a Medical Officer. The duties of the former are the reception, accommodation, feeding and clothing of prisoners, the execution of sentences passed on them, the maintenance of the necessary registers and records and the control over the income and expenditure of the prison; while those of the Medical Officer are quarantine arrangements in the case of newly admitted prisoners, the maintenance of the hygienic condition of the prisoners and the sanitary arrangements of the prison, the treatment of the sick and their classification according to their health for purpose of labour and diet, the inspection of the quality and quantity of rations and the observation of the weak minded &c. In discharging their respective duties the Superintendent is assisted by his staff of jailers, warders and clerks, and the Medical Officer by his solitary subordinate, the Sub-Assistant Surgeon. Thus while the duties of the Superintendent are practically of a

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general and non-technical character those of the Medical Officer are both general and technical, demanding his vigilance and interference at every stage, from the admission of the prisoner into the prison down to his release from it. Almost the entire responsibility for the welfare of the prisoners being thus shouldered by the Medical Officer what remains for the non-medical Superintendent of the prison is very little and even that little is more or less of a routine character hardly justifying the perpetuation of such a high paid separate appointment. And the funniest part of the whole matter is that the Medical Officer is to work under the control of the Superintendent, a non-medical officer with no special or extraordinary qualification in his favour. Further, every Central Jail is provided with an adequate staff of jailers, deputy jailers warders and clerks, of whom the jailers are paid as much as Rs. 150 to 250 per month and the deputy jailers Rs. 60 to 100. If the cadre of jailers and deputy jailers be recruited from men of high education, say, graduates of a University and given sound training during the period of their probation it should certainly be possible for them to get through the routine functions of a non-professional nature, subject of course to the general supervision of a medical superintendent.

We therefore consider that the time is ripe for the abolition of the system of appointing non-medical officers as superintendents of prisons. The system is unsuited to the times and faulty, and its perpetuation entails the needless waste of a lot of public money which can be appropriated for really useful purposes. Nothing can better conduce to the efficient and economical administration of our prisons than the appointment of medical men as superintendents, preferably Indian medical men, because, born, bred up and educated in the country and being familiar with the habits, customs and tendencies of the prisoners, Indian medical men have numerous advantages over Anglo-Indians and Europeans in carrying on the administration of prisons. The paucity of qualified medical men is often put forward as a reason for the perpetuation of a fossilised system. The war has ended and many medical men have been discharged from war service. There are hundreds of young Indian medical men who have obtained temporary commissions in the Army and are now available for service here. The Provincial Medical Colleges are annually adding and thickening the ranks of our medical graduates. We therefore strongly urge for the consideration of the coming Jail Commission the advisability, nay the supreme necessity, of recruiting medical men as superintendents and thereby curtailing extra expenditure and improving the efficiency of the administration.

As regards the subordinate medical staff employed in jails, we quite endorse the views contained in the August number of our contemporary *the Indian Medical Journal*.

CORRESPONDENCE

Service of Sub-Assistant Surgeons Qualifying for Pension.

"In article 411 of the Civil Service Regulations it is said that the Government of India may at its discretion decide in the case of an officer (including a person in training for, but not actually appointed to, Government Service) who is selected to undergo a course of training, whether the time spent in training shall count as service qualifying for pension. A local Government exercises similar powers in respect of officers serving under it."

Note 1.—"The Government of India and Local Governments may delegate their power under this article to heads of Departments as regards officers serving under them."

At present the service of a Sub-Assistant Surgeon qualifying for pension commences from the date of passing the final examination after a long course of four years, whereas the service of a Sub-Inspector of Police commences from the date of joining the Police Training School. Why not the service of a Sub-Assistant Surgeon spent in the Medical College or school be counted as one qualifying for pension is a question which deserves consideration. I hope any of the kind members of the Legislative Council will take up the subject. The pupils of the various Medical Schools will, I believe, submit memorials to Surgeon-General through the proper channel to kindly pass orders to count the training period of four years as service qualifying for pension.

"Submedic."

Salaries Committee.

To
The Editor of the *Antiseptic*,
Madras.

Dear Sir,

It is a happy sign of the times that the Government have after all decided to consider the claims of its subordinates other than those who have been dealt with by the Public Service Commission for increase of pay. And, to this effect they have appointed a Committee consisting of officials and non-officials. So, it now behoves us to press our claims for increase adequate to our education and status. It is conceded on all hands that we are one of the four Taluq officers, the Tahsildar, Sub-Magistrate, Police Inspector and Doctor. It has been an anomaly up to now that we have been given a smaller scale of pay than the rest, even though our education was in most cases superior to theirs inasmuch as ours was a special nature after a general qualification even which could not be considered much less than theirs.

But past is past and to fight for it now is useless. All that we now desire is that we should be allowed a time scale of pay equal at least to the Tahsildar's, because it cannot be denied that while he is in revenue charge of the Taluq we are in medical charge of the same area.

The old talk of our amassing a fortune by private practice is an exploded myth, at least when considered in relation to the mofussil. Here we get into neighbourly obligations with our co-officials and it has become a sort of unwritten law for them to request for and for us to oblige with gratuitous treatment. If, however, any stray doctor stands upon his rights for payment then he becomes instantly unpopular. So far, about the officials in the mofussil. And precious little he makes from the country people with their prejudice for English medicines and the opposition of a number of quack doctors. So practically the mofussil Sub-Assistant Surgeon has got to be satisfied with his salary. Hence this aspect for increase should be adequately represented to the Committee.

Besides this, time was when our predecessors the Hospital Assistants were able to live decently with their 25 to 55 Rupees pay. Then things were selling at $\frac{1}{4}$ th or $\frac{1}{5}$ th the present rates. Furniture, foodstuffs, house-rent, everything could then be had at $\frac{1}{4}$ th or $\frac{1}{5}$ th the present rates. But now while the cost of these has increased four-fold and five-fold our pay has only been doubled. Hence comes the hardship of our not being able to make both ends meet. Our pay also should have been quadrupled or quintupled *pari passu*. So the least that could be called a comfortable pay for us would be Rs. 100 to 250 or 300. This increased scale of pay is after all what we deserve by right of our present-day superior education both generally and medically. And there need be no heart-burn in others at our getting this increase. For, how is even a Tahsildar superior to us? Let us consider that he is a graduate. I argue that we are no less, because, we are Matriculates with four years' course in a Special College and crowned by a stiff examination at the end. Certainly we are not inferior in qualifications when it comes to comparing.

We are thankful to Government for the recent increase but submit that it is much too inadequate an increase and so pray for more.

Dear Editor, I am sure you will be one of the witnesses if the Committee are going to examine any. I hope you will have our cause at heart and plead your best as it is just.

I am, Dear Sir,

Yours sincerely

C. Mariswami Mudaliar,

Sub-Assistant Surgeon.

WALAJANAGAR,
21st September 1919.

BOOK REVIEWS.

Recent advances in the treatment of Syphilis.—By Dr. Rājendra Kumar Sen, in charge of the hospital and dispensary of Dejee Tea Co., Ltd., with a foreword by Dr. P. Kraser, M. B. C. M., M. D., 80 pages.—Publishers:—Butterworth & Co., Medical Publishers, 6 Hastings Street, Calcutta. It is a special prize paper, for the best paper on the subject offered by the publishers of the *Indian Medical Gazette*. The book gives in a concise form all the available literature on the subject and also some practical experience gained by the author during the last 20 years as a Medical Officer in different hospitals. The author has taken much pains in bringing together the various methods of present-day treatment of syphilis. We recommend the book to senior students and junior practitioners as a very good book of reference.

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following Journals.—

The Bristol Medical-Chirurgical Journal. The American Journal of Clinical Medicine. The Good Health. The Indian Medical Gazette. The Practitioner and Review. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. The Canadian Medical Association Journal. The Calcutta Medical Journal.

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The Editor's and Manager's Office is at

323, Thambu Chetty St., Georgetown, Madras.

All literary communication and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7-8 or 10s.,

Half page Rs. 4-8 or 6s. a month.

The Subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.

THE ANTISEPTIC.

Vol. XVI.]

DECEMBER 1919.

No 12
Annual Sub-
scription Rs. 5

Original Articles.

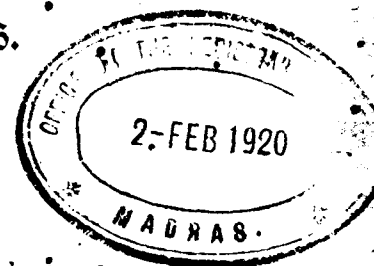
* CATARACT

BY

V. G. MUTHAYYA,

Govt. Ophthalmic Hospital, Madras.

(continued from page 410.)



AN extremely rare accident before operation is morphia giddiness and collapse from which the patient may be brought round in a few seconds or minutes by stimulating the lips and face with a dry towel. This is known as the dry shave. Failing which a drachm of brandy undiluted may be given by the mouth and a strychnine injection if necessary.

The Operation.

The eye lids are kept open by a speculum. The eye is fixed with a fixation forceps by a fold of conjunctiva and sub-conjunctival tissue below the vertical meridian of cornea or a little to one side of this line. If the lid is tight or the patient be a squizzer the orbicularis is held over the superciliary ridge by the thumb of the assistant. A Bowman's needle is passed in the limbus on the temporal side into the anterior chamber, the capsule is lacerated; a T shaped aperture is the best, the horizontal cut being made first and then a vertical cut downward from the centre. The needle is withdrawn slowly. Free needling with a broad edged needle is necessary to prevent secondary cataract. Any undue pressure on the lens may cause it to sink into the vitreous or dislocate it. A cystitome is used for lacerating the capsule when the pupil is not fairly dilated under atropine. In such cases, the section and iridectomy are done and then the capsule

is lacerated. The next step is the passing of a Vongrafe's knife with its cutting edge upwards on the track of the needle cautiously through the anterior chamber in front of the iris and its point pushed steadily, so that the counter-puncture is made in the limbus at the inner side in a position corresponding to that of the puncture. The counter puncture should be exactly opposite to the site of the puncture; generally between 3 and 9 o'clock if the cornea is imagined to correspond to a clock, the two being at such a level that the upper half or a third of the cornea is separated by the section so as to form a flap. The knife is now made to cut its way out in an upward direction in a single sweep through the sclero-corneal junction. A conjunctival flap may be formed if necessary. The conjunctival flap has the advantage of becoming very quickly agglutinated to the subjacent parts and so close the wound externally. It thus protects the wound from the subsequent infection as in conjunctivitis, granular ophthalmia and lachrymal obstruction. It is also used in feeble people and those who suffer from cough. Adrenalin one instillation may be given 3 minutes before operation if a conjunctival flap is to be made to prevent hæmorrhage which is the only disadvantage of a conjunctival flap. Care must be taken that the knife is withdrawn from the wound slowly, so that the aqueous may escape as gradually as possible to avoid the evil results which too rapid escape of aqueous often entails such as extensive prolapse of iris, prolapse of vitreous, intraocular hæmorrhage, subluxation of lens. The dimension of the section varies in accordance with the size and consistency of the cataract, for example small incision in morgagnian and large incision in dark large lens.

Greatest care should be taken not to touch the edge of the lids with any part of the knife or any instrument since infective matter may be carried on it into the eye. I here quote a paragraph of Col. Kirkpatrick's report for 1917:—"It goes without saying that great importance is attached to a light hold of the knife whilst making the section and to allowing the knife to find its own way through the tissue as far as possible. A block to support the upper half of the forearm has been found of considerable utility as ensuring increased steadiness and accuracy in making this section. This is covered by a towel soaked in disinfectant and placed beside the patient's head, the elbow and upper part of the forearm are rested on it whilst the ulnar side of the hand is supported on the side of the patient's head". As soon as the section is completed the speculum is held forward by fingers of one hand and the globe steadied by fixing the conjunctiva with fixation forceps near the section (on the nasal side in the right eye and on the temporal side in the left eye) by the fingers of the other hand of the assistant.

The next step of the operation is iridectomy. In making this, the orbicularis is held up over the superciliary ridge by the ring finger of the left

hand which holds the iris forceps, which is passed into the anterior chamber through the middle of the incision to the pupillary border of the iris. The little finger of the right hand is supported on the face. Iris is seized *lightly* with the forceps. A small portion of the iris is cut away with a snip of the scissors at right angles to the wound. Thus a neat coloboma is obtained. As the iris is a sensitive structure, if it is pressed with forceps, it causes pain to the patient, he winces and causes the expulsion of the lens, vitreous escape, and detachment of the iris. Some excise a very small bit of that part of the periphery of iris which lies directly beneath the wound. This is known as peripheral iridectomy. If the cortical matter is of a kind that is likely to wash out easily, a peripheral iridectomy is often performed so that the sphincter of the iris is left intact. There are some surgeons who consider that iridectomy is an unnecessary mutilation of the eye, an operation more liable to set up iritis and attended with optical defects besides being a permanent disfigurement. There are some who hold that cataract extraction with iridectomy is less likely to be attended with prolapse of iris and a delivery of the lens is brought about with less force. This is not the place to discuss the points in favour of or against such a proceeding, beyond mentioning that the optical results without iridectomy are decidedly better, should the operation be successful. But the liability to synechia, prolapse of iris and involvement of the iris in the cicatrix, is sufficient to raise doubts as to which is the better procedure. If the patient strains or rolls his eye about, the speculum is removed and Smith's lid control hook is substituted, a double hook being used instead of Smith's single one. This is used also chiefly in bulgy eyes, soon after the section is made.

How to use Smith's lid control hook. * *

* "The assistant stands on the patient's left side and passes a lid hook under the upper lid. The hook is held between the thumb and the forefinger of the right hand. The three outer fingers of this are used to push the orbicularis muscle above the superciliary ridge. In doing this the palmar surfaces are turned towards the patient's feet. The lower part of the orbicularis is held below the lower orbital region by the left thumb. If the lid is now drawn forward it carries with it the orbital connective tissue with its attachment to the aponeurosis check ligaments, capsule of tenon and ocular muscles. The posterior pole of the eyeball is thus sucked into the apex of the orbit carrying the vitreous body with it so that an escape of the vitreous is unlikely to occur."

The next step is the removal of the lens. The patient is asked to look gently downwards towards his feet or towards his hand which is held at a desired distance. First, a light pressure is applied on the sclera behind the

* From Col. Kirkpatrick's clinic in G. O. H.

upper lip of the wound with the curette and then on the lower edge of the cornea towards the centre of the eyeball, when the upper edge of the lens presents itself between the separated edges of the wound through the rent in the capsule. By the continuance of this pressure, the lens is expelled. If there be difficulty in delivering the lens, the latter is helped by a Bowman's needle either to lacerate the capsule which is insufficiently lacerated, or if the lens tightly fits the section to deliver the lens. This latter method was originated by Colonel Elliot and he used to call it the cart wheel movement. By the use of this method, the eyeball may be spared injurious pressure. The patient no longer looks in the downward direction. If any fragments of lens matter are seen, it is washed out gently with a full stream from McKeown's irrigator (the whole irrigator and its contents sterilized). In cases where a fragment resists dislodgment a clean nozzle is taken and passed into the chamber, a stream may be allowed to play about the cortex directly. If a loose bit of capsule is in the pupillary area blocking the aperture made or it is situated near the section especially, it is removed with capsule forceps or iris forceps with great care. Toilette of the wound;—The pillars of the coloboma are freed by gently striking down each pillar with the irrigator alone in most cases and also in some cases with the iris repositor. If any conjunctival flap is made, it is spread out smooth into its place so as to cover the incision. The speculum is removed, the eye is tested by finger counting to afford satisfaction to the patient. Atropine one instillation is given. If some cortex be left behind which resists washing out, 3 instillations may be given preferably on the table or in the evening according to convenience of time. A pause of 5 minutes being made between each instillation closing canaliculi with a bit of sterilized lint or cotton, and a dose of aspirin usually 10 grs., ordered at bedtime, and B. D. if necessary if there is fear of iritis.

A piece of dry sterilized lint is put on the closed lids. Pieces of sterilized cotton are laid over this, pressure of the bandage being sufficient to keep the dressings in place. The other eye also is bandaged at the same time to give complete rest for 24 hours. The main object is to shut off light, dust and germs. Instead of dry cotton to the operated eye a wet pad of sterilized cotton soaked in perchloride lotion 1 in 3,000 is preferable. Colonel Maynard of Calcutta introduced this. This forms a very good mould to the operated eye and exerts an even pressure. Soon after the dressing is over, the patient should be instructed not to touch the dressings or shield, as the eye might go septic and vision would be lost.

Accidents and immediate complications.

Wrong position of the knife. This has been made by the most careful of men. The knife will have to be withdrawn and introduced after filling the chamber with saline from the irrigator if necessary.

Early escape of aqueous. There should not be delay in making the counter puncture. No pressure whatever should be exerted on the globe with the fixation forceps. The knife must go on the track of the needle. The chamber may be refilled with the saline from the irrigator.

• • • Haemorrhage into the anterior chamber may take place from the iris or conjunctiva. This may be removed by pressure with spatula on the cornea or with a stream from the irrigator. The latter being decidedly the better method. In healthy eyes the blood is absorbed in a few days.

• • • The section may be too small. This rarely happens. It has to be enlarged by scissors taking care not to damage the iris, as irido dialysis is formed if the iris is injured.

Dislocation of the lens. If too great a pressure is applied on the lens in lacerating the capsule, suspensory ligament is ruptured and the lens may sink into vitreous. This may happen when the pressure is applied during the delivery of the lens. This is one of the serious accidents that can occur in a cataract extraction. Cataract spoon or vectis may at once be applied and lens removed with as little escape of vitreous as possible, a Smith's lid hook being used. In spoon or vectis delivery cases, it is found advisable to put the patient at once on Mist. Salicylas (15 grs. to 1 oz) 1 oz. T. D. for at least 3 days and tight bandage which need not be opened at all for two or three days. The other eye if it has some vision may be released after 24 hours if patient be restless.

Capsule may be insufficiently lacerated. Hence the lens does not present at all. Capsule has to be ruptured again with Bowman's needle or cystitome or with cataract knife.

Escape of vitreous. This is a serious complication. Its presence in the wound is indicated by the appearance of a perfectly transparent viscid fluid and black pupil. This is due to the pressure on the eyeball by speculum, fixation forceps or spatula or to fluid vitreous or weak posterior capsule or spasm of orbicularis. Avoid all pressure. Remove speculum. Use a modified Smith's lid control hook as mentioned above with the orbicularis held back by the fingers and the lid is at once pulled forward on the hook and the operation proceeded with. Early removal of the lens with vectis or spoon with as little escape as possible may be necessary. If it is a bead in the section it is excised. If it is much the eye is closed and perchloride pad is applied to allow vitreous to fall back. The loss of a small quantity of vitreous is not serious; a considerable portion may escape without any immediate ill-effects, but is attended, later on with detachment of the retina. The prolapse hinders accurate replacement of iris, as it lies between the lips of the wound; it prevents accurate coaptation of the wound. The vitreous may give rise to suppuration of the wound, since it is very apt to become infected.

So all care should be taken to see that all the vitreous has been reduced before closing the eye. Both eyes are bandaged for three days after operation. Mixt. Salicylas is given if necessary to prevent inflammation of vitreous.

The collapse of cornea. This disappears as soon as the aqueous re-accumulates. The collapse may be relieved by introducing some warm saline from the irrigator.

Air bubble. This does no harm to the eye; it is absorbed in 3 or 4 days. But this may be removed very often by some stream from the irrigator.

After Treatment.

There is some slight smarting and sensation of sand for some hours in some cases due to perchloride irritation. The patient is usually put on milk and bread diet for the first two days. The bread is soaked in milk and given soft to prevent exertion from chewing. As the staple food of the South Indians is rice, a light diet may be ordered for such who desire the same. The patient may lie on the back for an hour or two and then may turn on any side as liked. The very evening the patient is allowed to sit or walk about if there be distention of abdomen.

Nausea or vomiting sometimes due to morphia is relieved by sips of soda solution. One dram to half a pint of warm water and mustard plaster to epigastrium. If the patient suffers from lung trouble, he is propped up after a few hours. Cough is relieved by morphia and ipecac lozenges B. P. or linctus; in diabetes, sodii bicarb drinks (20 grains, every 3 hours, in about 5 oz. of water for 24 hrs.) is given. Aspirin, codeine, etc., are given. If there is capsule, or lens matter left behind and if pupil is not well dilated, to prevent iritis mercury and aspirin is given. The dose of Liq. Hyd. Per. ch. being 3 i t. d. and aspirin usually grms. 10. or 15 B. D. or grs. X at night only as necessary. In troublesome patients, hands are loosely tied to the bed to prevent them hurting the operated eye with their fingers. Drunkards must not be deprived of their alcohol. Opium eaters should be allowed opium. The unoperated eye is released after 24 hours or the same evening if the patient is restless or troublesome. Generally the dressing in the operated eye is renewed daily after instilling atropine as required, the margins of lid being cleaned with a little sterilized cotton soaked in saline solution. The drops are always given with the lower lid gently held down by the thumb, the patient looking up all the time. In squeezers the orbicularis also may be held down by the fingers above the eyebrow. Atropine is continued till the danger of iritis has disappeared and pupil fully dilated. Anterior chamber is gradually restored and the wound healed up. Under ordinary circumstances the bandage was removed from the 7th to the 9th day and a shade was given. The patient's vision was tested the 10th day and discharged.

the next day if the eye was quiet and vision good (E. Q. V. G.). The following method is adopted in G. O. H. by Col. Kirkpatrick. It consists in removing the bandage after 48 or 72 hours from the operated eye in uncomplicated cases and in replacing it by cataract goggles, while the unoperated eye is covered with a dummy. Indications for a shield—when the chamber has formed and section has healed up, a shield may be put on. The great advantage that it claims is that it gives vent to the discharge from the eye if any. Prolonged bandaging often causes what is called an irritation. That is simply because the septic secretions which are so difficult to get quit of, are retained by the bandage and foment the eye.

If the other eye has a mature cataract, the patient is able to move about with the aid of the operated eye.

The goggles (Smith's patent) can be had of Messrs. Smith & Co., Mount Road, Madras.

Patients appear to be very comfortable with these. The amber cuts off the ultra violet rays. If there is much conjunctival discharge the goggle may be put on 24 hours after operation.

Complications.

Some times there is severe pain lasting for a long time, and marked injection of conjunctiva attended with watering. In such cases, the eye is examined for accumulated tears, inverted lower lid, eyelash within the palpebral aperture, or beginning of inflammation. This is treated by the removal of the cause. Anterior chamber may be shallow or form late. If it is due to impaction of capsule, capsule is searched for in the wound and removed. Capsule in section has a great tendency to behave after the manner of a foreign body preventing proper healing of the wound, and thus acts as a drain along which there may be an entrance of septic micro organisms. Capsule in section causes glaucoma.

(to be continued.)

• COULD THE BARBER MIDWIVES BE TRAINED?

BY

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At a time, when fortunately for this country, attention is just being directed to the question of the care of women during confinement and a natural horror is felt at the appalling mortality of child-birth by every one who

• Specially contributed to the Antiseptic.

realises the gravity of the situation, the question whether barber midwives should be trained in modern methods of midwifery is one that must necessarily engage the attention of all interested in the subject. The problem before us is could they be trained and is it at all profitable to attempt to train them.

But before going into this subject, I may make it clear what exactly I mean by the term "Barber midwife". I may at once state that it is not a woman belonging to the Barber caste that is meant, but rather a woman who is following the profession of a midwife hereditarily, who is generally of the barber caste but not necessarily so. Such a woman, few would deny, is uneducated, illiterate, rather primitive in her methods of work and generally dirty and filthy in her habits. The question whether a woman belonging to the barber caste who is educated in the vernacular and who has not had these methods of practising midwifery ingrained into her should be trained need not arise because except for the unfortunate accident of caste she is on the same footing as any other educated girl of the other castes. I shall limit the discussion therefore to the desirability or otherwise of training the 'Barber midwife' of the type I have depicted, which, be it remembered, is the type existing everywhere.

The people that honestly advocate the desirability of training these midwives no doubt genuinely feel that this is the only method of solving the problem of providing adequate help during child birth. They would argue that the barber midwife being a hereditary professional has got a certain tradition behind her and has got a practical knowledge of the work even if she may not know the modern methods of midwifery, she has got some knowledge of the subject on which you could build. Moreover, she is the person who is given free admission into the lying-in-room by all castes and she has already gained the confidence of the villagers. It would therefore be easy for her, if only we could train her in modern methods of midwifery, to once more get back to the village and practise her art better equipped and therefore more satisfactorily now. This would also solve the problem of the disposal of the barber midwife as the trained woman would oust by her successful practice her untrained sister and set an example also for other members of her community to follow her example. Lastly from an economic point of view the scheme would be a success as obviously it would cost a good deal less in as much as the trained barber midwife need not be state provided or if supported at all need not be paid anything more than a small bonus to keep her at her work and in the village where she was practising before.

I have attempted to place the case of those who advocate the training of the barber midwife as fairly as possible and hope I have not unconsciously omitted or neglected to emphasise any other advantage which might accrue.

Now, I may be permitted to state why this proposal does not commend itself to many who have bestowed any thought on the subject.

The practice of midwifery is an art by itself and requires a good deal of practice and care. It is not as easy to teach an ignorant rustic-like the barber midwife even the elements of the subject and when it is remembered how easily a case may be rendered abnormal by meddling, midwifery, anyone who has had the least experience of the subject will realise the immense possibilities for mischief in giving a few months training to these illiterates and sending them out labelled as qualified.

One of the first lessons in midwifery is to practise cleanliness and so far as the barber midwife is concerned this is almost impossible.

Now habit is second nature even with educated people, with an uneducated adult habit is as fixed and unalterable as in lower animals, and one might as well attempt to change the colour of a barber-woman's skin as to eradicate by a few months training her dirty uncivilised habits ingrained and transmitted through many generations. She will make use of her diploma only to persuade villagers that her ways are correct and with her certificate flourished in the face of the villagers as the hall mark of efficiency, she will become even bolder in her dangerous methods.

It is not an exaggeration to say that the essential knowledge in midwifery is the knowledge of Asepsis. A barber woman can never be made to grasp the fact that cleanliness is absolutely necessary. She won't wash herself or her patient. She believes with her patient that washing is very harmful during labour and she will continue trained or untrained to pull at the cord to remove a placenta, or to apply oil as a lubricant to the birth canal or to pull the arm of a cross birth.

On the other hand the ordinary trained midwives leave hospital with no particular prejudice against cleanliness and without a knowledge of the bad methods of practising midwifery. They have no previous experience to boast off and consequently try to practise what they are actually taught. Of late undoubtedly a better class of midwives are seeking to be trained and if occasionally some of them do not come up to the standard which they ought to come to by virtue of their training, it is largely due to factors which could be easily remedied.

The experience of most medical men would lead us to come to but one conclusion that it is useless to train them. In fact a serious attempt was made in the United Provinces to train these women but after two years it had to be given up as a hopeless failure.

Surgeon-General W. R. Edwards remarks "my personal feeling is that the endeavour to train 'indigenous dais' should be dropped and that we should concentrate our energies in training midwives."

Colonel R. B. Wilson, Superintendent, Campbell Medical School, states that in his experience the recruitment and training of these women has been most disheartening and in the most cases always more or less of a complete failure.

Major Steen, Prof. of Midwifery at the Calcutta Medical College, is of opinion that the indigenous dais cannot be trained in a new method any more than we can expect a "Sarah Gamp" to change her system.

Col. Mactaggart, Inspector-General of the United Provinces, thinks that all attempts to improve and educate the existing bazaar dais are hopeless and may as well be dropped at once.

The consensus of opinion of those who are well fitted to speak on the subject is therefore clearly against the training of the barber midwife.

The question may be looked at from another point of view. We are all anxious to create in the minds of the people an eagerness for resorting to clean methods of midwifery and we are sincerely desirous of popularising the system of midwifery which we are practising. Would the training of the barber midwife help us towards the ideal. Now I would respectfully submit that if it is worth while doing a thing at all, it is worth doing it well. And if it is worth training a woman to be a midwife it is certainly worth training her to be an efficient midwife which implies a certain capacity in the individual to imbibe what is taught, to profit by what she sees and to faithfully practice what she has been trained to. It is idle to expect these in an ignorant barber midwife who has already learnt what not to do.

•• "A little knowledge is a dangerous thing.
Drink deep or taste not the Pyaerean spring."

The barber midwife with a smattering of midwifery is positively more dangerous than one untrained because she creates in the general public a false sense of security and by virtue of her passport, the so-called certificate, she becomes more bold and daring and practises with greater impunity. The public make no distinction between 'fully' trained and 'partially trained' midwives and the faults of these latter will be surely laid at the door of the system of training. It is obvious that the whole system will come under bad odour through the half-trained votaries of the science and we shall be drifting farther and farther away from our ideal, the ideal of popularising our science amongst the masses.

I feel that this a very real danger which those who are enthusiastic about training barber women, do but imperfectly realise.

Let me not be understood as condemning wholesale the barber midwife and holding up the trained midwife as a model of care and trustworthiness. On the other hand no one is more painfully conscious than I am of the many

defects which exist in these women, of their tendency to drift, of their general slackness and carelessness, especially some years after training in practising clean midwifery.

But I hold these are remediable defects. The women require supervision and are easily amenable to discipline. They require periodic post-graduate training. It is a little curious that while every grade of medical men are more or less compulsorily forced to undergo post-graduate training the midwife has so long been lost sight of. The I.M.S. Officers are required to take study leave; the Assistant and Sub-Assistant Surgeons have got periodic examinations, the Sanitary Inspectors have quinquennial training; even the compounders are required to pass an intermediate and higher grade departmental tests before being promoted; but apparently the trained midwife stands in no need of such training. On the face of it this is a serious defect which ought to be immediately remedied. I hold that it should be compulsory to get every midwife practising under a local board or municipality trained periodically at intervals of 5 years and for a period of 3 months in one of the big lying-in-institutions in the city. After some years of practice, the training would be of immense benefit to them.

The class of Indian midwives that are at present desirous of getting trained are certainly superior to those who sought training 15 years ago. Most of them have had a secondary education in one of the vernaculars and some of them have studied English up to the 5th form. We ought therefore to improve the standard and gradually increase the efficiency of the service. The time is approaching when we should seriously think of introducing a Midwives Act and inaugurate a supervising staff.

Let us attempt to climb higher and higher for even though the immediate results may not be very encouraging, in the end our attempts will be crowned with success. To attempt to train the barber midwife would on the other hand be a step in the retrograde direction and although we may fondly imagine we are moving rapidly by so doing we may be on a steep incline moving fast no doubt but God knows to what abysmal darkness. Let us have a distinct vision of what is before us before we leap into futurity.

*THE TEMPERATURE AND ITS MEANING.

BY

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It is not the purpose of this article to lay claim to anything that is original or unknown to the medical profession. Nothing is so commonly observed in medical practice as taking the temperature when a doctor is

• Specially contributed to the *Antiseptic*.

called in to see a case, and nothing so commonly neglected as studying its character and importance. The practitioner takes the temperature as an involuntary act, because he had been taught to do so as a routine, and he does not seriously mind it, unless it be too low or too high; but busies himself in right earnest with the other examinations with the result that when everything is over, he may, sometimes, have to apply the thermometer again to answer the inquisitive query from an anxious relation of the patient. In the end he prescribes a certain remedy, may visit the patient daily, and take the temperature automatically, and change prescriptions with little or no benefit like a "shot-gun" practice where nothing is definitely aimed at, and, therefore, the game is uncertain. And why? Because he did not care to study its character, or to look for a meaning in its sudden or gradual rise, or fall, or in its maintaining a steady level. He does not fully appreciate how the temperature helps diagnosis, or influence prognosis, or indicates a particular line of treatment, and therefore a particular remedy, to hit the mark and bring down the game like "a rifle practice". It is, therefore, to emphasise on the careful study of its character, and its value as a diagnostic, prognostic and therapeutic means that the present article is intended. In this, care had been taken to collect together the salient and notable points about temperature that are scattered about here and there, some of the observations having made such impressions in my own little practice that they gave me the stimulus to undertake this task.

The normal temperature of the body is observed to be about 98.4° or 98.6° F (37° C), but is said to vary in either direction to the extent of half a degree or more under perfectly healthy conditions. It also varies somewhat at different times of the day, for instance, it may tend to rise a fraction of a degree in the latter part of the day more than in the morning. Generally, it is lower from 2 A.M. to 6 A.M. and it gradually rises until between 5 P.M. and 8 P.M. after which it again slowly diminishes. Age also exercises a marked influence on the temperature. In children it is about half a degree higher than in adults as is the case with the very old in whom it is slightly higher than in middle life, and in both it is subject to great fluctuations under trivial causes. In febrile diseases there is commonly a similar fluctuation when the evening temperature of a patient may be found to be higher than in the early hours of the day. As it may vary considerably during the day in some cases, it would be necessary to record the temperature every few hours instead of at mornings and evenings.

Regarding the method of using the thermometer, a word or two will not be out of place here. Now that there are different kinds of thermometers in the market recording temperatures in 5 minutes, and half a minute, and so on, no general rule can be laid down as to which kind is to be used except that it would be always better to use the one with which one is quite familiar, and to exceed the period which the instrument professes to

require. Dr. Fenwick, M. D., B. S., etc., in his medical diagnosis, advises to warm the thermometer first by holding it in the hand, and then to introduce its bulb below the fold of the skin, covering the edge of the Pectoralis major muscle, and keep it in close contact with the axilla for five minutes, and then read of the degree of temperature to which the mercurial column has risen before removing the thermometer, unless it has a self-registering scale attached to it. The observations should be made twice in the day; from seven to nine in the morning, and from five to seven in the evening, being the most suitable times. The general practice is to take it in the mouth, but it is objectionable to do so in a delirious patient, or in children. In young children, the thermometer may be placed in the fold of the groin, and the thigh flexed on the abdomen. In some cases, it is important to ascertain the interior temperature, and this is best done by the introduction of the thermometer into the rectum or the vagina. The instrument should never be returned to its case before being washed in lotion after every use, for, one is likely to forget to do so just before use.

Classification.—As said above, the normal temperature of the axilla is 98.6° F. Any notable deviation from this (below 97° or above 99.5°) indicates some disturbance of health. Temperatures have been variously classified by various authorities, but the following classification of Fenwick is more elaborate and informative, and will answer all practical purposes:—

Below 96.8°	is a	Collapse temperatures.
96.8° to 97.7°	...	Sub-normal temperatures.
100.4° to 101°	...	Slight febrile temperatures.
101.3° to 102° in morning and 103° in evening	...	Moderate febrile temperatures.
103° in morning: about 105° in evening	...	High fever temperatures.
105.8° to 107.5°	...	Hyperpyrexia temperatures.

Types of fever.—It has been found that the form of fever varies in different diseases and at different periods of the same fever. It is said to be *continuous* when it remains at a point above the normal with a fluctuation of not more than about a degree and a half (F) in the twenty-four hours, falling, as in health, a little in the morning, and rising in the evening. It is called *remittent* when there is a considerable difference between the morning and evening, but the lowest point keeps above the normal. It is termed *intermittent* when the morning temperature falls below the normal line, whilst that in the evening is some degrees above it.

The stages of fever.—A single observation of temperature gives no decisive clue in any case independently of other symptoms. The course of temperature reveals certain stages of febrile diseases, and the most clearly

marked in cases that recover, are the following:—(1) The initial or pyrogenetic stage "stadium incrementi" which generally begins with a shivering fit, and in which the temperature is high, though the patient may complain of only feeling cold. It is said to take four days to reach 104°, in typhoid fever. (2) The fastigium or acme, in which the highest average temperature of the disease is attained. (3) The stage of decrement or "stadium decrementi", which is followed by the period of defervescence or cooling down. This may be sudden or gradual, in the former case it is called crisis, and in the latter, lysis.

The following general rules of Fenwick regarding temperatures will be of great help in the prognosis, diagnosis and treatment of most of the diseases attended with fevers.

1. That either very high or very low temperatures must be regarded as dangerous—if excessively so, they are usually fatal.
2. Very sudden changes are suspicious, and often dangerous.
3. A fresh rise, after the temperature has begun to fall, or has been stationary for some time, generally indicates a complication or the approach of some new disease.
4. An unexpected fall usually accompanies hæmorrhage, perforation of the pleura or peritoneum, or exhausting diarrhoea.
5. A considerable rise in a disease, not usually considered febrile (Epilepsy, Chorea, Tetanus, Cancer, etc.), is often a forerunner of death.

This last fact is not very easy of verification, the opportunities presenting such cases being very rare; but, in my private practice, I had the good fortune to come across a case of tetanus puerperalis in a Brahmin girl of about 20, a year and about a month ago, when I was amazed to see that the patient did not survive twenty-four hours after the onset of a rising fever, the temperature of which a few seconds before death was 107.2° F. To be candid, though I had very little hope of her recovery, I did not think that her end was so near. Nor did a more veteran physician who was also consulted anticipate it; for, we wanted to do all that was possible, and had even resolved to wire to Madras for anti-tetanus serum.

The diseases in which the termination of fever is:—

- | | | |
|---------------------|---|-------------------------|
| (a) By crisis. | (b) By lysis. | (c) By crisis or lysis. |
| 1. Typhus. | 1. Typhoid. | 1. Dengue Fever. |
| 2. Relapsing. | 2. Scarlet. | |
| 3. Measles. | 3. Rheumatic Fever. | |
| 4. Lobar pneumonia. | 4. Infectious Jaundice (Weil's disease) | |
| 5. Pyæmia. | 5. Pleurisy c sero-fibrinous exudation. | |
| 6. Erysipelas. | | |

6. Broncho pneumonia (rarely in crisis too).
7. Abscess of the brain.

The diseases in which the type of fever (Temp.) is:—

- | | |
|--|--|
| (a) Remittent. | (b) Intermittent. |
| 1. Pyæmia | 1. Malarial Fever or Ague of quotidian, tertian, quartan and double tertian varieties. |
| 2. Kala Azar (irregularly.) | |
| 3. Measles (before rash.) | |
| 4. Erysipelas. | |
| 5. Lobar pneumonia. | |
| 6. Broncho-pneumonia (irregularly). | |
| (c) Intermittent. | (d) Continuous. |
| or remittent | |
| 1. Tuberculosis (Hectic inverse type also.) | 1. Hodgkin's disease. |
| 2. Chicken pox | 2. Scarletina. |
| 3. Typhoid | 3. Lobar pneumonia. |
| 4. Syphilis (when high) | 4. Influenza. |
| 5. Empyema (Hectic) | |
| 6. Liver abscess (Hectic) | |
| 7. Gall stone colic | |
| 8. Cerebral abscess. | |
| 9. Sub-acute or athenic appendicitis (Hectic). | |
| (e) Irregular. | |
| 1. Cerebro-Spinal meningitis | |
| 2. Cerebral meningitis | |
| 3. Diphtheria | |
| 4. Rheumatic Fever | |
| 5. Infective endo-carditis | |
| 6. Cancer of the splenic flexure of the colon | |

Some cases in which high temperature may be seen:—

1. Yellow Fever 103° to 105° and even 110°.
2. Sunstroke 106° to 110°
3. Tetanus 108° to 110° just before death.

The turning points in temperatures respecting some of the more common diseases.

1. Typhoid (enteric). In this, the temperature rises very gradually during the first week, that in the evening is often 2° higher than that in the morning, whilst the next morning it is 1° less than on the preceding evening.

As the end of the first week, there is no increase of evening temperature, but that of the morning is less than in the evening. In the second week, there is only a slight morning remission. In the beginning of third week, there is often an increase of temperature and if improvement takes place, the difference between morning and evening is striking. In case of recovery, the fall is gradual. Mild cases generally terminate in 21 days, but severe ones may last for from 5 to 10 weeks. Relapses may occur at any time within 10 days especially in those who have previously suffered from Malarial fever. A permanent temperature of 104° or an elevation of the morning over the evening temperature is an unfavourable sign.

2. *Acute Lobar Pneumonia.* In cases that recover a crisis is likely to occur on the sixth, seventh, or eighth day of the attack, and is often accompanied by diarrhoea, severe sweatings, or the passing of a large quantity of thick urine. The temperature falls below the normal in about 12 or 18 hours. If, on the other hand, the fever persists for some length of time, with an increase at nights, followed by profuse perspirations towards the morning, there is some likelihood of its terminating in phthisis.

3. *Plague.* In favourable cases, there is a sudden fall of temperature (crisis) attended by profuse sweatings. Even in cases that recover convalescence is tedious.

4. *Influenza.* The temperature is of a continuous, remittent and irregular type. Usually varies from 102° to 104° F and continues about the same height until the termination of the fever.

5. *Malarial Fever.* In the hot stage, the temperature may attain a height of 105° or 106° , but yet there is nothing very much to be alarmed at it. It falls by crisis during the sweating period.

6. *Typhus.* If the temperature does not exceed 103.5° F before the 4th day, the case will probably be a mild one. In cases of recovery, the decline is by crisis about the 14th day.

7. *Relapsing Fever.* The temperature rapidly rises and continues high until the crisis. Relapse occurs in from 3 to 8 days and may be succeeded by others.

At random. A considerable elevation of temperature after any surgical operation is suggestive of septic intoxication, septicæmia or pneumonia. A subnormal temperature informs you that the patient is labouring under a shock, or is weak, or has some suppuration in the brain or chest. A slight rise may be due to the absorption of broken-down material.

When hæmorrhage has taken place in the Pons Varolii, the temperature may rise at once instead of being depressed.

Fever, especially when high and sustained, markedly remittent, or punctuated by rigors, is one of the danger signals in chronic suppuration of the middle ear.

The temperature is unreliable in peritonitis. In an acute infection by streptococci after a wound or operation or in puerperal fever, a rapid rise of temperature to 105° or 106° F is a herald of death. When there is no rise at all, perforation may be suspected.

A subnormal temperature with a slow pulse in a patient in an æthnic or typhoid condition, especially if he has otitis media, is very suggestive of cerebral abscess.

Fever in cirrhosis of liver is of evil omen.

OUR CONTEMPORARIES. MEDICINE.

The Diagnosis of Pulmonary Tuberculosis.

Sir Thomas Horder.—Certain physiological differences between the two sides of the healthy chest, found especially in young patients, in females, and in those in whom the chest-wall is thinly covered, are frequent sources of error in the diagnosis of phthisis. Expansion and percussion resonance are relatively deficient over the upper lobe of the right lung, and the breath-sounds may be bronchial. This last sign often leads to error, and it is not at all uncommon to find a diagnosis of phthisis based almost entirely upon it. Less significance should be attached to any of these three signs on the right than on the left side. The explanation of these physiological differences is doubtful, but probably the chief factor is the high level of the right bronchus.

In well-established phthisis the lesion is much more often bilateral than the physical signs lead one to suppose. The reason is the less affected side is taken as the standard wherewith to compare the more affected.

Just as the lesion in phthisis may be regarded as being, in most cases, more extensive than the signs suggest, so their duration may be regarded as being, in most cases, longer than the history indicates.

Skiagrams in cases of suspected phthisis must always be interpreted in conjunction with the clinical features. Many of the cases of so-called hilus-phthisis are really due to old (arrested) glandular disease. Similarly, shadows about the bronchial tubes and near the diaphragm cannot properly be judged apart from general considerations.

When examination of the chest reveals the signs of bronchial catarrh, any or all of the following features should raise a suspicion of phthisis:

(1) The signs are largely or entirely unilateral; (2) the signs are more marked at the apex than at the base; (3) the rale has the consonating quality, indicating that it is produced near to solid lung or in a cavity; and (4) the constitutional symptoms (fever, sweating, anæmia, loss of weight and strength) are proportionate to the amount of the catarrh, and are more marked than is usual in simple bronchitis. The final court of appeal is the search for tubercle bacilli in the sputa; three successive negative examinations of material, properly chosen, may be considered to exclude phthisis.

It is not common to find the "physical signs of phthisical cavity"—hyper-resonant percussion note, and cavernous breathing. Nor is this surprising, because it is reasonable to suppose that the fibrosed lung and thickened pleura, which generally cover a phthisical cavity, lead to deficient rather than to increased percussion tone; and seeing that the cavity is by no means empty, there is no special reason why the breath-sounds should be cavernous. But, in point of fact, cavity is diagnosed more by the knowledge that the disease is advanced, and that the sputa are purulent and abundant, than from special signs. Yet if amphoric breathing and bell sound are present, and if pneumothorax can be excluded, cavity may be diagnosed with confidence.

Tuberculosis of the lung, considered from the point of view of morbid anatomy, exists in three main types:—

(1) *Chronic caseating broncho-pneumonia*:—This is the lesion in "ordinary phthisis." The physical signs may be those of broncho-pneumonia, but are quite as often those of the associated lesions, bronchitis, emphysema, and thickened pleura.

(2) *Acute caseous pneumonia* ("pneumonic phthisis"). A somewhat uncommon disease.—The signs are those of an extensive lobar pneumonia.

(3) *Acute miliary tuberculosis*.—The signs, when present, are those of widespread capillary bronchitis.

Hæmoptysis in a young man, who is apparently healthy, should be regarded as evidence of phthisis, and he should be treated accordingly. But be prepared for a lack of gratitude, if not for actual complaint, later on. The prompt treatment at this early stage usually results in a cure, in which event the patient may throw doubt upon the diagnosis, and may resent the interruption of his career. If, however, the practitioner makes light of the hæmoptysis, the disease is likely to become more firmly established; in which case he lays himself open to a charge of neglect.

Hæmoptysis occurs at three stages in the course of phthisis. The source of the blood and the significance of the hæmorrhage are also different in these.

(1) *Early in the disease*.—The hæmoptysis is often the first symptom, and it may be the only one. The blood is small in amount, rarely more than a couple of drachms. It is unaccompanied by sputa, and, often unaccompanied by cough, welling up into the mouth by the act of clearing the throat (*fluo sanguinis*). Constitutional symptoms are often absent. Not infrequently the incident wakens the patient in the night. The source of the blood is the congested bronchi near to the tuberculous focus. The chief significance of this type of hæmoptysis is its relation to diagnosis.

(2) *During the course of a well-established case*.—The hæmorrhage is accompanied by cough and often by slight fever. After the first bout the hæmorrhage "tails off" slowly, the whole process lasting from a few hours up to a week or 10 days. Recrudescences sometimes occur, especially if treatment is casual. The blood comes from an ulcerated vessel in the wall of a cavity. A period of considerable betterment may follow the event, or it may usher in a serious set-back with extension of the disease.

(3) *At a late event in an advanced case*.—The hæmorrhage is large in amount, and often fatal. The blood comes from a ruptured pulmonary aneurysm lying in a cavity. The cavity fills rapidly, the blood overflows into the neighbouring bronchi and reaches the trachea, whence it is in part inhaled into other parts of the lung, and in part escapes from the mouth.

The blood of an hæmoptysis in a suspected case of early phthisis is often sent to a laboratory to be examined for tubercle bacilli—a futile proceeding, and, if the practitioner is influenced against a diagnosis of tuberculosis by receiving a negative report, a dangerous one. Even when the disease has reached the ulcerating stage, blood is very unlikely material in which to find tubercle bacilli; in the blood expectorated at the outset of the disease, the search is hardly worth undertaking.

Never neglect to confirm the diagnosis of phthisis by the demonstration of tubercle bacilli in the sputa, however "classical" the signs and symptoms may be. Anæmia, wasting, sweats, quotidian intermittent fever, purulent sputa, hæmoptysis—in association with physical signs of consolidation or of cavity—may all occur in new-growth, lymphadenoma, or bronchiectasis.

There are three diseases in which the normal resistance to infection by the tubercle bacillus is so much lowered that phthisis may be present in a latent fashion for a considerable time without discovery—diabetes, cirrhosis of the liver, and leukaemia. So low is the tissue reaction to the tubercle bacillus in diabetes that pneumothorax is not uncommon as the first evidence of phthisis.

There is a decided family tendency to phthisis, and there is as well a similar family tendency to particular types of phthisis. In one family,

haemoptysis is common, in another pleurisy with effusion, in a third extensive fibrosis of the lung. It is thus useful to know not only the family incidence of the disease but the family type of tissue reaction.

Although certain general principles governing treatment in phthisis are well established, there are so many differences in the manifestations in individual cases, that it is important to select a scheme of treatment suitable to each case. This selection calls for judgment and experience. Not only the type of case as regards the pathological process in the lungs and other organs, but also the patient's temperament should be considered; for intelligent co-operation is essential to success. Some of the most difficult patients to help are those who leave the whole burden of the treatment to the doctor, and themselves evince complete inertia. In a few cases, despite this attitude, things go well; but in many more such an attitude spells failure, and patients should be warned against it at the beginning of treatment. Explain to them that they must make their cure a matter of hard work over a lengthy period, like any other goal worth reaching, a matter of concentrated effort under expert guidance.—*Medical Review*.

The Tip-Toe Sign of Sciatica.

Chiray and Roger describe a new sign of sciatica which they term the tip-toe sign (*signe de la pointe*). In a sciatica of any gravity the patient cannot raise himself on tip-toe on the affected side, or if he can do so, momentarily he cannot maintain the position. This is due to muscular weakness and not to pain provoked by the movement. To test for this sign the feet must be naked, for with a boot on the foot the attitude may seem to be realised by means of certain muscular substitution. The patient is first asked to stand on tip-toe on the sound side and as long as possible. The affected side is then tested and the posture is found completely impossible. Sometimes the appearance of realising it is produced because the patient can raise himself for an instant by a spring, but he cannot maintain the posture. When asked why he cannot make the movement he usually says he has not sufficient strength in the foot. He rarely invokes pain, which is easy to understand, for the movement relaxes the sciatic nerve.

The value of this sign is considerable. It usually appears early and is found in all lesions of the sciatic territory, whether roots or trunk, as soon as the process has attained a certain intensity and duration. When absent it can be stated that the motor neurons are not yet affected and a favourable prognosis can be given. On the other hand, its presence is a sign of gravity and permanence, since it reveals a muscular change and allows the reaction of degeneration, beginning or established to be affirmed. If the sign appears

after the pain, it also long outlasts it. Motor recovery of the nerve does not take place as rapidly as sensory. The sign is more delicate and occurs earlier than loss of the tendo-Achillis reflex.

The mechanism of the sign is as follows. Before raising the body on the toe it is inclined slightly forward so as to throw the weight on the ball of the foot which sets free the heel and allows it to be raised by the calf muscles. At the same time the peroneus longus and plantar muscles maintain the rigidity of the foot.

The writer was enabled by the experiences of the war to verify the part played by all these muscles in the movement. In all lesions, however slight, of the sciatic nerve, with paresis of the muscles of the calf and the plantar muscles, standing on tip toe was impossible. The same occurred in lesions of the posterior tibial or plantar nerves, when the plantar muscles alone were affected, and also in lesions of the external popliteal until the peronei had recovered power. In spite of strong contraction of the calf muscles the heel could scarcely be raised from the ground. On the other hand, in the case of a wounded man presenting reaction of degeneration of the anterior tibial nerve below the peronei, which were unaffected, the movement was normal. The same occurred in a lesion of the musculo-cutaneous. Thus standing on tip-toe requires the participation of three groups of muscles—the calf muscles, the peroneus longus and the plantar muscles. Failure of one of these groups produces difficulty or impossibility of the movement. Hence the importance of the tip-toe sign in sciatica. It is the only or the principal objective element in an affection in which all the symptomatology depends on the truthfulness of the patient.—*Medical Review*.

New Diagnostic methods in Cardiac Disease.

In the Journal of the American Medical Association, dated 8th March 1919, Benjamin and Brooks describe two new diagnostic methods of use in the investigation of cardiac disease.

1. This test is used to separate the more stubborn cases of simple tachycardia from the persistent type.

The individual is directed to drop the head and to bend forward to about an angle of 45°, whereupon the pulse rate will drop in a remarkable fashion; sometimes to half the original rate, if the case is one of simple tachycardia. The severe persistent type is not affected at all.

2. The second test, originally suggested by R. A. Morison is used in the diagnosis of mitral stenosis:—

The patient inhales amyl nitrate from a capsule in the usual way, while the observer listens at the apex beat. In cases of true mitral stenosis the doubtful presystolic sound is markedly intensified.—*Indian Medical Gazette*.

Thirst at Sea.

Mr. Morley Roberts writes: In 1910 the idea occurred to me that death at sea from thirst when there was no fresh water could at any rate be postponed, and possibly altogether avoided, by rectal injections of pure sea-water. I founded the view on the fact that when sea-water is actually drunk it sets up reverse peristalsis, locks up the pylorus in a tonic spasm such as occurs in acute abdominal cases, and hence is not absorbed; while hypotonic and isotonic injections, though unpleasant to drink and likely to cause vomiting, serve every purpose in subduing thirst. Thirst is in practice thus avoided when malignant disease or obstruction of the œsophagus prevents deglutition. I considered that the saline not needed by the blood plasma would be excreted by the kidneys, and that the heavy work thrown on them for short periods would be unlikely to damage them. I communicated these opinions to many medical men, and even to one medical paper—not the *British Medical Journal*—in 1911, but was unable to get them published without some proof. One well-known physiologist who thought them rather interesting suggested I should try the experiment on myself. This I did not do, for reasons with which I need not trouble you. I am, however, now in a position to quote evidence that my theoretical views were sound, and Mr. R. Graham, for whose *bona fides* many well-known men will vouch, has kindly permitted me to adduce it. The following are the facts:

While returning to England from the United States in 1916 he undertook a fast, and while fasting injected daily two gallons of pure sea-water. During the first five days he did not take anything whatever to drink, although on the fourth and fifth day he washed his mouth out with ordinary water. He did not feel in the least thirsty till the sixth day, when he took half a tumbler of water. Such thirst as he experienced was, however, very slight. On the seventh day he drank one and a half glasses of water, although he felt he could have gone without had he chosen to do so. During this period his pulse was normal, his general condition good, his strength well maintained, and though the injections resulted in the usual evacuation, there was no tendency to diarrhoea or any other disturbance. On the eighth day he resumed his normal life. I think there can be no doubt that these facts are highly important. Even this last year, owing to the U boat campaign, English seamen have died of thirst. With a Higginson syringe as part of a boat's normal equipment, I submit that such disasters could be avoided or, at the very least, postponed, thus affording castaways a better chance of being picked up.

The same post brought us a letter from Lieut.-Colonel GEO. WHERRY, M. CH., F. R. C. S., R. A. M. C. (T.), suggesting that "the injection of sea-water into the lower bowel, if slowly done, would give some relief and prolong life in such cases. We use saline injections in our hospital wards

with great advantage and the apparatus needed is of a simple kind:—a glass syringe or a rubber tube to be used as a siphon; the nozzle and bowl of a tobacco pipe in emergency might answer. Ad. I cannot gather from any navigator that the plan has ever been tried, I make the suggestion as above for the slow injection of sea-water as an enema for absorption."—B. M. J.

Edema of the Lungs.

The onset of œdema of the lungs has long been recognized by physicians as a serious complication in many disorders. Not infrequently it constitutes the fatal terminal event and is considered to be the immediate cause of death. There has been much discussion from time to time on the way in which pulmonary œdema occasions death. It is usually held that the liquid in the pulmonary alveoli prevents mechanically the gaseous exchange in the lungs and that suffocation occurs when the obstruction affects a sufficiently large area of the respiratory surface. (Edema of the lungs has formed a prominent feature in the clinical and pathological reports upon cases of gas poisoning during the war. A special investigation, has been carried out by M. O. Winternitz and R. A. Lambert on the question of whether the mere accumulation of fluid in the respiratory passages can lead to death. These observers have had the opportunity of studying the effects of all the gases commonly used in warfare under the exact conditions of the laboratory. They have noted the effects of exposing more than 3,000 dogs and an equal number of other animals to the vapours of different kinds and have studied the results at autopsy. They have been led to the conclusion that œdema of the lungs is merely an indication of some underlying disorder and is rarely, if ever, responsible for the death of an animal or patient. They base their conclusion on three sets of facts. They have noticed that animals killed by exposure to the irritant gases, as chlorine and phosgene, show at autopsy great variations in the degree of pulmonary œdema. While some animals exhibit a large accumulation of fluid, others show little or none. Moreover, animals killed after surviving the critical period of 48 hours exhibit often a higher degree of pulmonary œdema than those which have died earlier. Lastly, the production of artificial pulmonary œdema by irrigation of the lungs demonstrates that the lungs may be freely flooded with saline solution without any evident harmful changes in bodily well-being and without any subsequent lesions in the lung tissues which can be detected with the microscope. As much as six litres of warm physiological salt solution has been passed through the trachea of a dog in two hours without obvious effect. By using coloured fluid it has been ascertained that the liquid has reached the alveoli.—M. J. of Australia.

SURGERY.

The Danger of Chloroform in operations on the Tonsils.

H. S. Gabbett.—The writer gave an anæsthetic to a stout well-grown girl of 16 (she looked 20) for enucleation of tonsils by dissection. Anæsthesia was induced without difficulty by C_2E_2 on a domette mask. The mouth was then opened by gag and the vapour of Billroth's mixture (C_2E_1) blown in through a tube from a Junker apparatus. While the first tonsil was being enucleated, which was done with some difficulty, she gave signs of coming to, and the writer replaced the mask for a minute and gave a little more C_2E_2 , then returning to the Junker apparatus and tube. The fauces were swabbed out, and there was no indication of blood in the air passages. When the second tonsil was on the point of removal the patient suddenly ceased to breathe, the pupils dilated, and the heart stopped beating. Artificial respiration was carried on for nearly 2 hours, air entering the chest freely but there was never the slightest response. *Post mortem* a fairly large persistent thymus was found, and some enlarged abdominal glands; the left ventricle was uncontracted.

The writer thinks persistent thymus affords an explanation, though a little understood one, of the sudden cardiac failure. (1) Is there special danger in the operation of enucleation of tonsils? Several deaths have been recorded. (2) Can it be that the necessarily light anæsthesia given by a Junker apparatus and tube when the mouth is widely open is a source of peril? Auricular fibrillation is said to occur with light chloroform anæsthesia.

REPLIES TO THE PRECEDING QUESTIONS.

H. Tifley, F.R.C.S.—The case resembles many others which have proved fatal during the different methods of "operation for tonsils and adenoids," in that the patient was young, "well-grown," and comparatively speaking healthy. The means of obviating the disaster are the outcome of experience, acquired not without having paid the price of such mental suffering as must be endured by the principal actors in "a sudden death under an anæsthetic."

1. There is no danger in the operation of enucleation of tonsils assuming it is done with reasonable skill, but there is very real danger if anæsthesia is induced by chloroform, or by any mixture in which this drug is an important factor. On the other hand, the risk of the operation will be reduced to a minimum if deep narcosis is brought about by "open ether" preceded by a hypodermic injection of 1/100 grain atropine, the object of the latter being to check the excessive secretion of mucus which would otherwise be induced by the ether vapour. The ether anæsthesia must be pushed until the pharyngeal reflexes are abolished, and the respiratory movements are quiet and regular in rhythm. Then the patient may be gagged, and

while the actual operation is being performed anæsthesia may be maintained by chloroform administered through a Junker's inhaler. Under these circumstances the stimulant effect of the ether will not be destroyed by the depressing action of chloroform.

To the second question, whether the necessarily light anæsthesia given by a Junker apparatus and tube when the mouth is widely open is a source of peril, the writer replies that light chloroform anæsthesia is unwise for any operation, and especially in the throat, where the reflexes are notoriously sensitive and well developed. Further, it is impossible to perform enucleation by dissection satisfactorily unless the pharyngeal reflexes are abolished.

These statements are based on an experience of some 20 years of hospital and private practice. During this time the writer has seen 11 deaths under anæsthesia induced by chloroform, or a mixture of chloroform and ether. Three were in his own practice. He has never seen a death under "open ether" induction. In the last 5 years he has had in private 575 cases of tonsils "enucleated by dissection." He never employs any other method. With few exceptions, "open ether," preceded by atropine, has been the anæsthetic. He has not seen a single case of heart failure, and, incidentally has had only 2 cases of post-operative hæmorrhage.

As a general rule, both surgeon and anæsthetist run a grave and unnecessary risk when they agree to the induction of general anæsthesia by means of chloroform, or any mixture in which that drug is a powerful factor.

Felix Rood.—There are two distinct ways in which a patient may cease to breathe during chloroform anæsthesia. There is the ordinary overdose, the clinical picture being a slow failure, the respiration becomes diminished in frequency and volume, cyanosis develops secondarily, and finally, as in ordinary asphyxia, the heart fails. Death from this cause must be very rare, even if the condition is not recognised until respiration has ceased. These patients recover under a little gentle artificial respiration and administration of oxygen. The other way is a primary cardiac failure and the respiration fails secondarily. The clinical picture is quite different. Suddenly, generally during the induction, the patient becomes intensely pale, the pupils widely dilated, the radial pulse either extremely rapid and irregular or disappears. Respiration continues in a somewhat gasping way for a few moments; frequently exaggerated sighing inspiration is the first indication of the sudden cerebral anæmia. The patients the writer has seen recover from this condition have done so suddenly, and recovery has been due to measures directed to restore the cerebral circulation—elevation of the legs and inversion. The colour returns, the radial pulse becomes

once more palpable, and breathing starts again. Dr. Levy has shown experimentally in animals that this condition occurs during light and incomplete chloroform anaesthesia following some slight stimulus, and is due to fibrillation of the ventricle. The evidence is in favour of this being the cause of most of the fatalities under anaesthesia nearly always due to chloroform or its mixtures. According to reports of fatal cases, the patient has frequently been particularly strong and healthy. A very small amount of anaesthetic has been used, but during the induction or at the beginning of the operation the patient has either moved, phonated, vomited, or swallowed, showing a light degree of anaesthesia, and then suddenly died with the symptoms described.

When the operation of enucleation of the tonsil was introduced by Mr. George Waugh profound anaesthesia with chloroform, with abolition of all reflexes, was advocated. In experience of anaesthetics in a large number of these operations the writer never saw death with profound chloroform anaesthesia, but although it may not be dangerous under these circumstances chloroform anaesthesia sometimes looks rather alarming, and certainly requires very close and constant care, and is consequently a little difficult to manage in the darkened rooms used by some operators. Experiments with ether for this operation were conducted some time ago, and it was found that if a really profound anaesthesia is induced by a so-called "open ether"—that is, using many layers of gauze and several ounces of ether and pushing the anaesthetic until the respiration begins to get shallow, the pupils widely dilated, and all the pharyngeal and laryngeal reflexes abolished—an absolutely motionless field of operation is obtained, which has always been insisted upon for this operation. With ether this condition is obtained without the slightest anxiety; the patients are pink and rosy. Why, then, induce anaesthesia with chloroform or its mixtures in any case in which it is possible to avoid it?

Wm. Wilson (*ibid.* p. 781).—Enucleation of the tonsils is a major operation and subject to great risks which cannot be entirely obviated. Is the slight gain from complete dissection of the tonsils worth the extra risk in what is, after all a minor malady? This operation is passing out of fashion amongst the experts. Several deaths have been recorded. There are many more which have not been published.

The operation, to be satisfactory, is fairly prolonged, and involves much interference with free respiration whilst the tonsils are pulled inwards, in addition to the traction on the nerves of the neck. Here occurs a combination of dangers. Many of these patients are of lymphatic type and very susceptible to chloroform especially with respiratory obstruction. The lungs are filled with chloroform with imperfect aeration. Practically all embedded tonsils can be enucleated by incision of the mucosa and then

pulling through a blunt guillotine of suitable size, thus reducing the danger period. During these short manipulations ether should be substituted for chloroform. There will then be little danger of syncope.

George E. Waugh, F. R. C. S.—To attain deep chloroform anaesthesia the dangerous zone of light anaesthesia must be traversed. Modern research has shown how uncontrollable this danger is, and therein is the objection to the use of chloroform under any circumstances in surgery. But the resourcefulness and skill of the anaesthetist has circumvented that danger by developing the administration of open ether to such a pitch of perfection that the operation of removal of tonsils by dissection can be performed under it with the perfect surgical condition of an immobile pharynx. Under such a condition the surgeon can have no apprehension.—*Medical Review.*

Aural Suppuration in early Childhood.

D. Guthrie.—In every clinic devoted to ear and throat diseases of childhood two affections account for 90 per cent. of the work—*viz.*, tonsil-adenoid diseases, and middle-ear suppuration. But while practitioners are fully aware of the ill-effects of lymphoid enlargements about the throat suppurating ears are apt to be overlooked and neglected.

Middle-ear suppuration is not in itself a fatal disease; indeed, the majority of cases tend towards natural cure, but it brings many evils in its train. The constant swallowing of septic material causes ill-health and sometimes enteritis, meningitis is not rare as a sequel of otitis, whilst the destruction and cicatrization resulting from the inflammatory process may so damage the delicate ear mechanism as to lead to deafness. Text-books give scant information on suppurative otitis media in children.

In the foetal skull there is no osseous meatus, and the drum lies so obliquely as to be practically in the same plane as the upper wall of the membranous meatus. The mastoid process is as yet undeveloped, but the mastoid antrum is relatively large, is well drained by a roomy aditus, is close to the surface of the skull, and lies higher in relation to the middle ear than the adult antrum. The Eustachian tube is relatively shorter, wider, and more horizontal than in the adult, so that it acts as a good drain, though, infection of the middle ear from the naso-pharynx is favoured. A fact of importance is the occasional presence in the middle ear or antrum of a network of embryonic tissue. Usually this disappears before birth, but at times it persists in the antrum or attic during the first few months of extrauterine life, and so may render the child peculiarly liable to otitis media.

OTITIS MEDIA IN THE INFANT.

Aural suppuration is frequent during the first year of life. The close connection between otitis and pneumonia has often been remarked, and it is said that the middle ear is infected in every fatal case of infantile pneumonia. The commonest cause, however, of otitis in infants, is the ordinary cold, which is a serious disease in early life. The nasal passage is easily blocked, feeding is rendered difficult, and infected secretions are readily forced into the middle ear.

Symptoms.—Among all the diseases of children probably none is so frequently overlooked as otitis media. Before perforation and consequent appearance of pus in the meatus the diagnosis is not easy. In all infants who suffer from fever of obscure causation the ears should be examined. The temperature may be high, or not above 100° ; and in the latter case, as Still has pointed out, it is apt to continue even after the inflammation has subsided. Pain, as evidenced by continuous crying, restlessness and sleeplessness, and boring of the head into the pillow are often noted, while head-retraction, vomiting, and convulsions may lead one to suspect meningitis, until perforation reveals the cause. Pain is not constant, however, and may sometimes be absent. In the average case the drum perforates in 3 or 4 days, with prompt relief. At first, the pus is profuse, but later it becomes thin and scanty, and as a rule the ear is dry within 2 or 3 weeks.

Unfortunately, otoscope examination does not always assist in the diagnosis of otitis prior to perforation. The tympanic membrane may, indeed, appear normal if the stress of the disease has fallen upon other parts of the middle ear, and such cases are deceptive. On the other hand, a red and bulging drum will often betray the condition, but remember that in a crying infant the normal drum appears red. In examining the infant's ear remember the obliquity of the drum. The meatus is a mere slit, whose walls must be separated by pulling the auricle downwards. The use of a speculum with an obliquely cut end and a collar to give a good grip in manipulation may assist one to secure a glimpse of the drum, and a fleeting glimpse is often the best obtainable.

Considering the frequency of otitis in infants, mastoiditis is not a common complication. When it does occur, the thin outer wall of the antrum breaks down, and a subperiosteal abscess forms above and behind the ear, causing considerable downward the forward displacement of the auricle.

Treatment.—In the early stage of otitis, dry heat and the well-known cocaine, carbolic, and glycerine drops will relieve symptoms, but surgical treatment is more effective. The small operation of paracentesis tympani might with advantage be performed more frequently. The incision should divide the posterior part of the drum from below upwards, and should be

continued a little way along the inflamed meatal wall. General anaesthesia is advisable. The small clot which forms over the incision must be syringed out a few minutes later, as it is apt to impede drainage. Pus may not appear at once, but the flow will become established within a couple of days.

Otitis Media in Older Children.

At the age of 2 the mastoid process is already developed, and the disease tends more and more to approach the adult type. Acute inflammation is common, but the important lesion, the disease which destroys hearing and yet goes untreated in so many cases, is chronic suppurative otitis media. Downe found 26 per cent. due to measles and 12 per cent. due to scarlet fever. Scarlet fever is well known for its destructive effects on the ear, but on the whole it is well treated, as it is notifiable and a hospital disease. Measles, on the other hand, is treated at home, and is too often regarded as a trivial complaint. It is a more dangerous and disabling disease than scarlet fever. The great majority of children who suffer from chronic otitis are also sufferers from adenoids, and the septic infection of these adenoids are not only the cause of the otitis, but also the cause of its chronicity. The adenoid operation, therefore, has an important place in the prophylaxis as well as in the treatment of ear suppuration. As a portal of infection, the pharyngeal tonsil is second to none. Here enter measles, meningitis, and many another ill, and infection may readily pass from septic adenoids, along the Eustachian tube to the middle ear.

Treatment.

The following is the scheme of treatment: (1) cleansing and antiseptics; (2) removal of adenoids; (3) conservative operation; and (4) radical operation.

(1) and (2) will cure the majority of cases. After trying many methods, the writer advises the mother to make some mops with matches and cotton-wool, and with these to mop out the ear until dry; then to instil a few drops of peroxide of hydrogen and mop out once more until dry. This is to be done twice a day. Syringing in unskilled hands, is worse than useless, and, indeed, ears may cease discharging when the only advice was to stop syringing. The mopping method is a much more effective measure. As the discharge lessens, rectified spirit may, with advantage, be combined with the peroxide.

Large, firm masses of adenoids may be present, but more frequently a small block of friable and pus-soaked tissue is removed at the operation. Should the removal of adenoids, and 2 or 3 months of systematic "mopping and drops," fail to improve, operative methods must be considered. The radical mastoid operation is seldom indicated in childhood and should only

be performed in carefully selected cases—*g.*, cholesteatoma, necrosis of ossicles, etc. One naturally hesitates to perform, upon a small child, an operation whose effects upon the sense of hearing cannot be foretold. The so-called "conservative" mastoid operation (modified radical) should be chosen whenever possible.—*Medical Review.*

OBSTETRICS & GYNÆCOLOGY.

Midwifery Impressions.

BY

SIR JAMES R. ROBERTS, Kt., C.I.E., M.B., M.S., F.R.C.S., (Eng.)

LT.-COL., I.M.S. (Retd.)

The following notes may be of some use to those beginning obstetric practice in this country:—

Puerperal Septicæmia.—The prevention of this complication should begin before the confinement, and not after. Doctors and nurses now-a-days are so careful and use so many precautions that it is next to never that they are at fault. We may take it, therefore, as a useful rule that when septicæmia occurs, it is an anti-infection on the part of the patient. There is a great difference, as we all know, between ordinary cleanliness and surgical cleanliness; I have, therefore, advocated and have used for many years boric powder. This is dusted on the vulva once a day by the patient or nurse for a few days before the labour is due. I consider that its use is especially to be taught to the *dhai* members of the Victoria Memorial Scholarships classes. It is simple in application, and in my experience very preventative of septicæmia in the practice of these midwives; moreover, in difficult cases where an obstetric operation becomes necessary, it is a great relief to the operator to know that sepsis may be ruled out of court. Among the better classes and among English women boric powder is less essential, though not unnecessary. In all cases where difficulties are anticipated from the previous history or from pelvic measurements I insist on its use previous to labour. Where a well-to-do patient is in the hands of a first-class maternity nurse, whose practice is to shave and clean the parts, it stands to reason that boric powder is less essential, but in poorer homes, I say, use it.

Douches.—At one time I tried a series of cases in a nursing home, using a douche of weak biniodide on admission and continuing with boric powder every day. I had no cause to regret this practice as I had no cases of septicæmia. I do not approve of douching with any solution, unless it be properly prepared. What results can one expect from some lysol thrown into hot water, cold water added, and used immediately it is prepared. The solution has no time to sterilise itself, it cannot be anything but dangerous.

The practice should be, add lysol to boiled or very hot water, let it cool, then add hot water straight from the kettle, before use, to bring it to the proper temperature.

The use of douches after the labour is still a point under discussion, and varies in practice. The common sense view is that, given a normal and quick labour with a good nurse in attendance, and the external parts cleaned and sterilised, there is no use giving a douche, provided the discharges are received in some antiseptic material; but given conditions other than the above, where instruments have been used, where the labour has been prolonged, where it is anticipated clots will be retained, where the perineum has been torn, or where cystitis already exists, then I consider a well prepared douche to be essential. Again, in a hot moist tropical climate douching is more necessary than in a cold one.

Talking of cystitis complicating labour, some interesting points for consideration crop up. It is very important for the practitioner to see and examine a specimen of urine of the pregnant woman under his charge; a report from a laboratory is not necessary. The important points are the presence or absence of albumen, and the positive evidences of cystitis, as shown by mucus, pus and bacteria. If albumen be found, take the blood pressure from time to time, as a rapid rise is a danger signal of the most valuable nature. Extended practice in midwifery in India, among both Indians and Europeans, shows that coli infections of the bladders are more common than one is led to suspect. Keep this, therefore, in mind; prick up your ears when a pregnant woman complains of frequency of micturition, for you must be on your guard when the labour occurs to prevent coli septicæmia by infection of the uterus. Although this is, think, *j.e.*, in my experience, less dangerous than streptococcal, yet it is peculiar in forming abscesses in the pelvis or lumbar region that require immediate opening. I was once called in to see a lady, fourteen days after confinement, with fever, rigors, and great pain in the left thigh; nothing was to be seen or felt in the limb. The infection was not streptococcal, I was told. I was, therefore, right in diagnosing an abscess pressing on the lumbar plexus, and an operation from the loin opened the accumulation of pus.

The greater frequency of albuminuria and eclampsia among European women in India than in Europe, should always prepare one to meet this complication. Col. Godfrey Tate, I.M.S., has pointed out to me the association of coli infection of the bladder with eclampsia as incidental rather than co-incidental and this is a point that requires investigation, as it may explain this frequency. In such cases Esbach's albuminometer, he shows, is fallacious, giving a higher percentage of albumen, as the picric precipitates the mucus as well as the albumen. To obviate this error it is

necessary to filter off the mucosis. Always, therefore, inquire for a previous history of bladder trouble. Patients with coli kidney infection are, among the educated classes, generally aware of it and tell the practitioner so. Old and seemingly cured bladder troubles are quite likely to be re-lit by labour. One patient I had, who was a paratyphoid B. carrier, *i.e.*, was passing these bacilli in the urine, at the time of her confinement, passed safely through the parturition, but not without a relapse of the fever and its dysenteric complication.

Exhaustion.—There seems to be a failure among many to recognise that exhaustion is dangerous; the greater the exhaustion the nearer is the patient to death. We must make it a golden rule never to allow a labour to be prolonged. It is criminal to sit down and wait or to put off, hoping for the best. You have some splendid resources at your command, therefore, use them. *Three to four hours* in the second stage is enough for the strongest of primiparae. If you are called in to see a patient in whom labour has been prolonged, do not place any importance on the description given you of the frequency or insufficiency of the pains; but look carefully to all the signs and symptoms of exhaustion. I need not enumerate them here. Some highly-strung women become exhausted quicker than others. If a patient says to you "I can do no more," believe her and act accordingly, and act at once. Educated high-class women, whether European or Indian, have to pass a large-sized infant head through the pelvis, and suffer accordingly. Their labour is not for one moment to be compared to the women of Nature, to whom childbirth is merely an incident. It is prolonged pressure on the pelvic organs and tissues which is dangerous. You may expose them to considerable force in a forceps delivery, and no harm comes of it, provided no prolonged pressure has previously existed. A quick delivery means no exhaustion and a rapid recovery, a prolonged labour means exhaustion even unto death. I have seen some terrible cases in my time, so I warn others who succeed me. Fancy keeping even a primipara 24 hours, or 48 hours or even three days in labour with the excuse that the pains are not strong. This is done and continually being done; but it is not the art of modern midwifery. I consider that one should be guided by considerations such as these:—Suppose we have a head presentation, make out at least that the position is not one of occipito posterior. Directly the os has dilated, there is no necessity to delay any further. You have measured the pelvis, or you know from a previous delivery that it is of good size. Now is the time to give pituitrin hypodermically; this commences to act so quickly that it is necessary to have everything ready beforehand, especially the chloroform. With pituitrin it is possible to anaesthetise the patient more deeply, and still the pains go on. The condition is one of unconsciousness to all suffering though it is not as deep as surgical anaesthesia. If all is well the child is born in a few minutes, *i.e.*, between ten and twenty. The advantage of

pituitrin is that, should it fail to act, you know of its failure in twenty minutes, and you see the pains diminishing; then is the time to put on forceps without allowing the patient to recover from chloroform. Failure of pituitrin is, therefore, a most valuable index of what to do. It stands to reason that in pituitrin deliveries, the forceps should also be prepared beforehand, for it is a serious mistake to allow the patient to recover from the anaesthesia while the instruments are being prepared and a period of considerable pain experienced. I am afraid that a dread against pituitrin has been created, as a legacy from the ergot days, but I have never seen anything untoward happen, especially if it is managed properly, *i.e.*, the uterus emptied when it fails. The fear of a retained placenta arises, but it can be got over by following the body of the child down with one hand on the uterus, so as to dislocate the placenta, when the os is still widely open, but no time should be lost as in all midwifery manipulations. Adherent placentae are not more frequent with pituitrin than without. Moreover, if by illchance a placenta be retained, the effect of pituitrin soon passes off and it can be delivered, as is usual, with or without chloroform.

During the first stage of labour we have the valuable assistance of morphia and scopolamine, or heroin to allay the pain; my experience is against the use of these according to the stereotyped practice of twilight sleep; it prolongs labour so much, and with it the attendant exhaustion, which I consider a serious danger. One or two doses of heroin during the first stage, I think, is most valuable. When the os is dilated, I say get the labour over as soon as possible, for everybody's sake.

When it is unruptured membranes that are keeping the delivery back they must be ruptured first before pituitrin is ever thought of; such common-sense practice was usual before pituitrin days, so need not be referred to further.

I consider this drug a most valuable adjunct to midwifery practice; what strikes one is that deliveries accomplished by this means with the use of chloroform, are so much quicker, so painless, accompanied by no exhaustion, and followed by such a rapid and excellent recovery that it takes away the fear of delivery from the modern woman. Moreover, it is so valuable in preventing post-partum haemorrhage, as the uterus contracts afterwards to perfection. Where the dread of pituitrin comes in, I do not know, except in those cases where it is not accompanied by chloroform, when the agony is intense, and forceps are not immediately used to effect delivery. The same rule applies to breech presentations.

In my experience, I think that there is a good deal of vagueness in practitioners' minds as what is a dilated os, or one not quite so. It is best to act with the ones that are not quite so, as if they were dilated, and to ask yourself the question when examining, "Can the lip of the os retract over the head?" I am not writing of a rigid os.

In applying forceps or in any intra-uterine manipulations, it is most necessary not to act in the dark, but to know exactly the position of the presenting part. Some of us have an advantage in having a small hand, so there is no excuse for lady doctors, I always think.

The perineum.—So much stress is laid in our text-books on saving the perineum, and so many instructions given to effect this end, that one doubts their efficacy; however, in practice among the upper classes, where the infant's head is large, it is of frequent occurrence for a tear to occur. "Give it time to stretch, and assist the stretching," is the line advocated. I have always assisted the perineum by support and by drawing it forward, but if it goes,—well, what of it? I have spent so much time in repairing pelvic floors due to submucous tearing of the levator ani, that I would sooner see the pelvic floor torn, and of course with it part of the perineum, than see it stretched. The one is immediately reparable, the other means creation of an invalid with pelvic trouble, until some experienced surgeon recognises that it is the pelvic floor that is at fault and requires repair. Nothing is more pitiable than to see a lady of our class transformed into a sedentary invalid with pelvic pain and discomfort, and all due to a stretched perineum, which really means a pelvic floor failing to give support. The loss too of the constrictor vaginæ by stretching is a serious disability. On the whole, I say, let us tear rather than stretch, provided the attendant knows how to repair the loss of continuity. The anatomy of the parts is that the levator ani forming so important a part of the pelvic floor arises from the spine of the ischium and white line of the fascia, a portion coming forward on either side of the vagina to be attached to the ramus of the pubes. It is just that part which gets torn or stretched, and which it is important to repair at the time, or by subsequent operation. The tear passes from the perineum into the vagina, and almost invariably passes up one side of the posterior column of that canal, and ends by dividing this anterior portion of the levator. It is, therefore, most important to pick up the muscular fibres in the suture. I do not advocate any elaborate technique for this operation, such as is required to be done in subsequent days, apart from delivery. Three full-curved big needles with or without a needle-holder, and threaded with silk, is all that need be prepared. The patient is drawn across the bed in the usual gynaecological position, and the legs held by a nurse; a good light is, of course, necessary. It is quite possible to do without an assistant separating the labiæ, which can be done with the fingers of the left hand in an emergency. I lay great stress on the left forefinger being used to guide the needle through the deeper portions and under the tear. You cannot see, therefore, feel what you are doing. A surgeon has three eyes, two in his head and one on the tip of his finger. The upper portion of the wound is first sewn; when it is complete, run the finger up the sewing and feel that the stitches have been placed to include the deeper tissues, and that no pouch is left under the upper stitches in which

discharge accumulates, and so prevents healing, for this is a disaster. The use of catgut is not to be recommended, as uterine discharges are very digestive; the stitches are to be removed on the ninth day, therefore, it is important to use a material which will hold till then.

Maternity Homes.—It is a very great advantage to have the patient in an institution, where there is a well lit and furnished labour room, and where there is plenty of assistance in the shape of nurses. I consider that at the time of delivery two nurses are always required. It is so important to do everything smartly and quickly,—no waste of time, no failure to seize every opportunity. If you are attending a case in a private house, take a second nurse with you. With two nurses it is all so easy, with one it is all fumbling and loss of time. Thus to stitch a perineum while the only one nurse holds the chloroform cap, is a most difficult procedure. With two, it is so easy to seize the opportunity to put in the stitches before the patient has recovered from the anaesthesia, and before the placenta is expressed.

One point about maternity homes, and one that has constantly to be borne in mind, is the mental condition of the patients after the shock of the delivery. In nervous and highly-strung women it is most noticeable; they are apt to make the most extraordinary allegations against the nurses and staff of the home, and to give the place a bad name. In many ways the running of a maternity home is a very thankless job from a matron's point of view. It is a most difficult position, and she should be warned of the nature of her work. The bed-room of the position is that the attitude of a female, human or animal, towards her offspring is that of protection. If you come between a female and her cub you know you are in for it; if you come between a woman and her babe look out for storms. The routine of a maternity home should be to remove the infant as little as possible from the presence of the mother. It should be washed, bathed and dressed in her presence, and only removed to another room for very serious reasons, such as severe illness on the part of the mother, or want of sleep and very disturbed nights. The mother feels that she is neglected unless she has constant attendance night and day, hence the staff of a maternity home must be larger than that of a nursing one. In India I have often regretted that a hostel is not attached as a matter of routine to both classes of these institutions; to have the friends close at hand is a relief to everyone concerned, and if I were a matron I should at least let them keep watch from time to time.

Abscess of the breast.—The association of this abscess and unclean axillæ, which has been so frequent in my experience that I cannot help thinking they are connected, emphasises the necessity for keeping that part surgically clean, by the use of boracic powder, or swabbing with listerine or some antiseptic. It is a natural manoeuvre for the nurse to begin sponging the axilla first, then continuing the movement over the breast which cannot but smear the nipple with axillary sepsis.

Replacement of uterus.—It should be the routine practice to examine for any retroversion three weeks to a month after delivery, and, if this exists, to correct the fault by a pessary; much subsequent trouble is saved, as at that time the uterine wall is softer, and more amenable to continued pressure and support.

The binder.—This can be lightly applied with safety-pins. It is a mistake to place a pad over the uterus, and a tightly drawn binder over this. This practice produces pelvic congestion, more lochial discharge, and subsequent subinvolution. I have seen serious post-partum hæmorrhage produced by its application, which stopped on its removal, and explained how the patient at a previous delivery had nearly lost her life.—*Indian Medical Gazette.*

CASES AND COMMENTS.

A Case of Acute Nephritis.

BY

J. APPA RAU, L. M. P.,

Government Hospital, Chittoor.

On 17th October at 7 P. M. I was called upon to attend a patient in this town only. The patient was a Mohammadan girl by name Kushkithbe aged about 8 years and the following symptoms and signs were exhibited by the patient when I first saw her.

The patient was very restless, unable to stick up to any posture for even two minutes. The respirations were short and rapid counting about 40 per minute. During inspiration and expiration very loud sounds were heard, something-like that of a cat's cry. The eyes were almost open but the corneal reflex is present. The pulse could only be counted with difficulty as it was so very imperceptible. The sounds of the heart were not palpable and on auscultation very feeble sounds were heard. The whole body was bloated, especially the face gives a prominent œdema.

History.—Four days back she had an attack of fever and from that day forwards slight œdema was starting, first in the face, then in the lower extremities and gradually the œdema became generalised. She was not passing urine for the last three days and even before that, she had not got a satisfactory urination. For the last two days she was having cough and the troublesome sounds during respiration—gradually

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the condition became so bad as to the present by the unani medicine, they were giving her.

Treatment.—Her urgent dyspnoea compelled me to seek an immediate relief for her. I sept for an Amylenitras capsule and I applied that for her inhalation emergently. No satisfactory result followed she was still having the same sort of trouble. Immediately I gave her a hypodermic Injection of Strychnine. Hydrochloride 1/200 Gr. and Digitalin 1/200 Gr. In the meanwhile to relieve her constipation I gave her 1/2 of an ounce of Glycerine per rectum as enemata. Then I passed a soft rubber catheter and no urine came out. But she passed a very hard small motion. By this time the pulse was improved slightly. Now I took up cupping apparatus and applied the dry cupping to the loins. A few hours after this she passed a small quantify of urine. The same night I put her on the following prescription.

Mag. Sulph. ʒiv.
Pot. Acotas. Gr. 30.
Spts. Juniper M. 12.
Spts. Am. Aromat. M. 15.
Tr. Bellodonna, M. X.
Liqr. Am. Acet. ʒ 3ii.
Aqua ad. iʒ oz.
1/2 part 3rd hourly.

On the same night she had two more motions. The next morning when I went to see her she was far improved. Her Dyspnoea was very much relieved, the pulse was stronger. The patient was able to speak a little though with certain difficulty. Her motionless eyes were properly working and she wanted some water to drink. Her œdema was in the same state. This day I reduced the dose of Mag. Sulph. by one drachm and added Liqr. Trinitrini M. i. to the above three doses of mixture. The same evening her condition was much improved. The pulse was stronger, the Dyspnoea was much better the heart sounds were also stronger, the rales in the lungs are to be heard in the same way. The next morning (i.e.,) third day the rales also were much lessened and the œdema was slightly reduced. She was passing only small quantities of urine only 2 or 3 times a day. I then ordered for hot hip baths which made her to secrete a large amount of urine. I pushed the same prescription and in ten days the whole œdema came down and the girl is now quite alright.

A Case of Mistaken Spume.

BY

K. NARAYANAN NAIR, L. M. P.

Medical Officer, Kollangode.

With reference to the various articles on spume and its treatment appearing in I. M. G. &c., I wish to give my experiences of a case of spume diagnosed and treated as such for over a year in a big hospital.

The patient was a Revenue officer, who suffered for several months from diarrhoea as he said and complained of dull pain over the colon and sometimes in the intestines. His tongue was raw, face pinched, body emaciated and he was hardly able to walk a few steps without feeling fagged or exhausted. On this account he had placed himself under the treatment of an eminent physician and obtained slight temporary relief with yellow santoline and long leave for rest. He showed himself to me early in 1917. The history of his case and the unsuccessful treatment made me at once suspect that his condition was the result of amæbic infection rather than that of spume some real cases of which I had observed in Calcutta and Port Blair. Microscopic examination of his stools readily yielded confirmation of my suspicions.

I gave him a series of emetine injections with the result that in about 6 weeks' time he became quite a different man. His weight increased by about 28 lbs. and the remarkable improvement measure was noticed and complimented about by all he came across. He who had to heavily lean on a heavy staff on one side and a strong man on the other in order to walk a few paces from the Jutka to my office, became able to walk half a dozen miles without any feeling of exhaustion, to enjoy a good square meal and to resume his responsible duties of a Tahsildar in about 2 months' time. A fervent prayer went forth from me for the Doctor who discovered emetine and for introducing into the Hospitals such a valuable aid to diagnosis as a microscope.

I request you to publish the above not so much with a view of advertising myself but for emphasising the fact that no medical institution in India should be without a microscope and for cautioning medical men that in no case of intestinal troubles should a careful examination of stools be overlooked.

THE ANTISEPTIC

DECEMBER, 1919

Reform in Medical Education in the Madras Presidency.



Of the several institutions in the Madras Presidency for imparting medical education, the Medical College at Madras affords training to the M. B. B. S., L. M. S., Military Assistant Surgeon and Lady Apothecary students and the Medical Schools at Rayapuram (Madras), Vizagapatam, Tanjore, Madura and Calicut to the L. M. P. pupils. The M. B. and L. M. S. course is one and the same, the distinction being based upon the percentage of marks obtained at the general M. B. Examination, the M. B. degree being conferred on those who obtain the minimum of 50% and the L. M. S. degree on those who obtain 40%. Although both M. B. and L. M. S. undergo the same course of five years' training it is only the M. B. degree that is a registrable qualification in Great Britain, but not the L. M. S. degree. All the other courses are of four years and are not registrable in Great Britain. The Military Assistant Surgeon and Lady Apothecary students and the L. M. P. pupils are taught the same subjects, undergo the same course of training and are examined by the same board of examiners, though the first two classes undergo their training in the Madras Medical College and the third in the Medical Schools. On what principle these three classes of candidates are examined by the same board of examiners and sorted and earmarked as Military Assistant Surgeons, Lady Apothecaries and Licensed Medical Practitioners, it is difficult to understand. The board of examiners, as constituted at present, is not a body of experts, nor does it inspect or otherwise control the working of the several Medical institutions that train and send up candidates for examination. When the course of training and the standard of test are the same for all the three classes of candidates what is the object of maintaining three different licenses, one for Military Assistant Surgeons, another for Lady Apothecaries and a third for Licensed Medical Practitioners? The Civil and Military Sub-Assistant Surgeon pupils, both males and females, undergo training in the Medical schools. While so, why should there be separate classes in the Medical College for giving the same training to Military Assistant Surgeon and Lady Apothecary students? Of those who have undergone the same training and stood the same test why should some be

ACKNOWLEDGMENTS.

We acknowledge with thanks, receipt of the following Journals:-

The Bristol Medical, Chirurgical Journal. The American Journal of Clinical Medicine. The Good Health. The Indian Medical Gazette. The Practical Medicine. The China Medical Missionary Journal. The Canadian Practitioner and Review. The Cleveland Medical Journal. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Sei-I-Kwai Medical Journal. The American Journal of Surgery. The Canadian Medical Association Journal. The Calcutta Medical Journal.

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The Editor's and Manager's Office is at
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All literary communications and books for review should be sent direct to the Editor.

All business communications and payments should be addressed to the Manager.

Advertisement Rates per page per month Rs. 7-8 or 10s.,

Half page Rs. 4-8 or 6s. a month.

The Subscription for the Journal is Rs. 5 a year, payable strictly in advance.

Subscribers will be taken on at any period of the current year.