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THE ANTISEPTIC.

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Original Articles.

• REMARKS ON THE CAUSES AND TREATMENT OF CHRONIC GONORRHOEA IN THE MALE.

BY

C. F. MARSHALL, M. SC., M. D., F. R. C. S.

Surgeon to the British Skin Hospital.

IN spite of the greater attention which has in recent years been paid to the subject of gonorrhœa, and in spite of new therapeutic measures which have been introduced, it must be admitted that the treatment of chronic gonorrhœa, urethritis and its complications is far from satisfactory.

I think that this state of affairs can, to a certain extent, be attributed to the modern tendency to pay too much attention to the local and too little to the soil. Since the discovery of the gonococcus by Neisser in 1879, all efforts of treatment have been directed

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3

Too energetic or too prolonged local treatment:—The long continuance of urethral injections is apt of itself to induce a catarrhal condition of the urethral mucous membrane, thus rendering it more liable to fresh gonococcal infection, either from without or by auto-infection from latent foci of gonococci. It is, therefore, unwise to continue injections for long after the gonococci have disappeared from the discharge.

Secondary infection by other bacteria.—Although the gonococcus is the true causal agent of gonorrhœa and has been found in all the lesions of general gonococcal infection, and although it appears proved that a definite gonococcal septicæmia may be caused by the gonococcus alone, it also seems established that other bacteria often play a considerable rôle in the causation of chronic gonorrhœa. In such cases the gonococcus lessens the power of resistance of the tissues and opens the door to secondary infection by other bacteria.

This secondary infection is all the more likely to occur when the soil is previously weakened by general predisposing conditions, such as syphilis, tubercle, gout, etc., which we shall consider under the general causes of chronicity.

In his researches on the bacterial flora of the *normal* urethra, Pfeiffer found the pseudo-bacillus of diphtheria and a strepto-bacillus, but typical streptococci and the bacillus coli were absent. He states that under certain conditions these organisms may produce urethritis. It would, therefore, appear that certain microbes, which may be regarded as normal inhabitants of the urethra, may of themselves give rise to urethritis and thus predispose to or complicate gonorrhœal infection.

Hume describes a type of non-specific urethritis, due to the presence of a long foreskin which produces urethral congestion and favours the growth of microbes. He is of opinion that the presence of pre-existing urethral changes caused by non-specific urethritis explains the variation and chronicity of many cases of gonorrhœa; also that the existence of chronic non-specific urethritis may explain the origin of many cases of obscure prostatic or vesicular infections.

(B) *General Causes.*—These include all agents which diminish the power of resistance of the body against the invasion of gonococci.

It is well known that a syphilitic soil predisposes to infection by the tubercle bacillus. In a recent lecture before the Medical Society of London, Mr. D'Arcy Power pointed out that the syphilitic soil also predisposes to staphylococcal and pneumococcal infection. This being accepted, is it not possible that the syphilitic soil may also predispose to gonococcal infection, or at any rate weaken the power of resistance to such infection?

A case which came under my care some time ago I think supports this view. A young man, who had comparatively recently been treated for syphilis, contracted gonorrhoea. This was complicated by posterior urethritis, prostatitis and sero-fibrinous synovitis of the knees and ankles. On the strength of the antecedent syphilis he was treated with iodides and mercury and made a remarkably good recovery. No local treatment was applied to the urethra. I think this was a case of gonococcal invasion of a syphilitic soil. It may, of course, be objected that the joint affection was syphilitic, but the coincidence of the synovitis with acute posterior urethritis, its sero-fibrinous nature, and the great pain on movement pointed to gonorrhoeal rather than syphilitic joint affection.

I therefore suggest that the syphilitic soil is one of the causes of chronicity in gonorrhoea, and that an attack of gonorrhoea occurring in a patient who is still suffering from the effects of syphilis—even though this may not be apparent—is more likely to become chronic than an attack of gonorrhoea occurring in a non-syphilitic subject. For this reason I think it advisable to give a trial to antisyphilitic treatment (mixed treatment by mercury and iodides preferably) in cases of chronic gonorrhoea; for many of the victims of gonorrhoea have also suffered from syphilis.

Besides the syphilitic soil, weakening of the power of resistance of the tissues by other microbes such as the tubercle bacillus probably tends to cause chronicity in gonorrhoea. It is stated by some authors that gonorrhoeal urethritis has a tendency to become chronic in gouty subjects. This may possibly be explained by the hyper-acidity of the blood—a slightly acid medium being said to be more favourable to the growth of gonococci than a neutral or alkaline medium (Finger.)

In the next article I propose to discuss the various methods of treatment of chronic gonorrhoea, including the more recent treatment by vaccines and serums.

(To be continued.)

* THE DIAGNOSIS OF RECTAL DISEASES.

BY

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PART I.—THE SYMPTOMATOLOGY OF RECTAL DISEASES.

PART 2.—THE EXAMINATION OF THE RECTUM.

For the recognition of the different diseases of the rectum, and the elucidation of the symptoms complained of, the history forms a most important part of the investigation. This should precede the actual

* Specially contributed to *The Antiseptic*.

examination because, by means of the history, we can frequently form an opinion as to which disease is present, or can direct our examination to some special factor.

While some of the affections have several symptoms in common, there is often some outstanding feature which points to a definite and characteristic lesion. The history of affections of other parts of the body, and more especially those of the abdominal and adjacent pelvic organs, may throw light on an otherwise obscure rectal lesion.

There are four cardinal points to be investigated in any case presenting rectal symptoms, *viz* :—

- (1) Pain.
- (2) Protrusion from the anus.
- (3) The passage of abnormal material.
- (4) The condition of the bowels.

These will be considered more in detail, but, in addition, the factors of age, sex, occupation, and social conditions help towards forming a correct judgment.

As regards age, in such a symptom as protrusion, this occurring in a child usually means prolapsus ani, while in the adult the commonest prolapse from the anus is due to hæmorrhoids. The difference of sex may again help in diagnosis, stricture of the rectum in its simple form being commoner in women than in men, while obstruction due to malignant disease has its preponderance in males. A sedentary occupation, by favouring constipation, predisposes and largely helps in the production of hæmorrhoids.

The duration of symptoms may be of use in differentiating the acute from the chronic diseases. The long duration of any affection in an adult would always weigh against malignant disease.

Pain and other abnormal sensations about the rectum and anus are very common and are often the factor which causes the patient to seek advice. The pain may be of sudden onset: such as is caused by the impaction of a foreign body in the anal canal, or by the laceration of one of the anal valves. These occur during defecation, and persist in the former until the foreign body is voided or removed, and in the latter till the resulting wound heals. Where a foreign body lies in the folds of the anal canal pricking or tearing pain is experienced, in some cases continually, but is usually worse during defecation. Following an abrasion of the mucous membrane the pain due to fissure or abscess may follow. In anal fissure great pain is experienced during defecation, due to the stretching of the wound and the exposure of nerve fibres, while the pain often lasts for some hours after the act and is

so severe that the action of the bowels is avoided as long as possible. Abscesses in connection with the lower bowel cause continuous pain, aching or throbbing in character. Sitting is often impossible and defecation causes intense pain, which is largely relieved when the pus is evacuated. Hæmorrhoids are a fruitful source of pain and discomfort. The external or thrombotic pile—a small hæmatoma situated at the anal margin—causes a continuous discomfort, whilst sitting and walking are painful. The discomfort lasts naturally for about a week, and gradually disappears as the blood clot is absorbed. Internal piles, by their protrusion from the anus during defecation, give rise afterwards to a feeling of something left behind, while if even temporarily gripped by the sphincter they cause a sickening pain. Should they become strangulated the pain is intense, and remains so till they are reduced or become insensitised through gangrene.

Stricture of the rectum has no definite variety of pain associated with it apart from the obstruction which it gives to the passage of fæces. Malignant disease situated in the rectum is usually painless, and this illustrates the fact that gross lesions may occur in this part of the bowel without discomfort, owing to its lack of sensation. On the other hand, an epithelioma occurring at the anal margin causes immediate discomfort, because of the sensitive nature of this orifice. In the later stages of carcinoma recti pain may be intense and persistent, owing to involvement of the anal margin, the sacral nerves, or adjacent viscera.

There are some cases of pain occurring in the rectum in which, on examination, no local lesion is present. Such cases give rise to considerable difficulty in diagnosis. Pain coming on at night during sleep is frequently due to distension of the rectum with flatus and occurs during temporary constipation, a scybalous mass acting as a ball-valve in the rectum. In other cases there may be neuralgia, though this is doubtful. The crises of locomotor ataxia may give rise to confusion in cases where no local lesion exists to account for the symptom, and it behoves one to examine the nervous system in all such cases. In addition to local pain, lesions of the rectum may give rise to sensations referred to some more distant part. Sciatica may be due to rectal disease, and this symptom, associated with diarrhoea in an old person, is most suspicious of malignant disease. Such an abnormal sensation as itching is often due to some rectal lesion—fissure, ulcer, hæmorrhoids, or constipation. The sensation of incomplete emptiness of the rectum occurs in constipation, when the bowel is not entirely emptied, and also in impaction of fæces. It is also a symptom of hæmorrhoids, especially when of large size, and of growth when this encroaches on the lowest part of the rectum.

Protrusion from the anus forms a frequent part of the symptom complex. It is important to distinguish spontaneous protrusion from that which occurs only on straining efforts, particularly those of defecation.

Prolapse of the wall of the anal canal occurs most commonly in children, the result of frequent straining which accompanies either severe diarrhoea or constipation. Later the sphincters become so stretched that protrusion may occur on the least effort. This condition is closely simulated by the protrusion of a rectal polypus, which has a sufficiently long pedicle to allow it to come outside the anus. In the former condition it is impossible to insert the finger or a probe between the protrusion and the margin of the anus, while in the latter case this may be readily done. In adults, the commonest form of protrusion results from the presence of internal hæmorrhoids. These at first protrude from the anus during defecation, and return to their normal position spontaneously when that act is accomplished. Later, however, when they become worse, protrusion may occur at any time, and manual replacement is necessary. Finally, if strangulation or thrombosis occur the patient himself is unable to replace the prolapsed parts. Other protrusions that may be mentioned are the prolapsus ani or recti occurring in adults independent of hæmorrhoids. An intussusception may appear at, and protrude through the anus, either an extensive form occurring in children, or in adults a malignant growth of the sigmoid may intussuscept the lower part of the large intestine. Prolapse of the rectum may follow operative interference—after division of both sphincters in the treatment of fistula, or their removal in excision of the rectum with the formation of a perineal anus.

Amongst *abnormal materials* passed per rectum, blood, pus, and mucous are the most important.

Blood is an important sign of any abrasion or ulceration of the surface. Its character is usually that of recent origin and it is bright red in colour. Altered blood may be passed per anum in a dark tarry condition, indicative of some bleeding higher up the intestinal tract, a symptom known as mæna. The amount of blood lost varies greatly; in fissure a spot occurs occasionally after defecation and usually on the fæces.

The bleeding of hæmorrhoids may be slight or sufficiently severe to cause profound anæmia. It occurs most commonly during defecation, the fæces being streaked with blood, and the latter may be spirited about on straining.

Cancer of the rectum causes hæmorrhage when ulceration has occurred, and the blood is passed on defecation either directly or it may accumulate in the rectum during the intervals. Fistulæ rarely bleed, except during their formation from the extension of abscess, and in this case the blood is mixed with pus. Prolapse of the rectum, both in children and adults, may bleed if excoriation or ulceration be present. The rectal polypus gives rise to the passage of blood and a watery serous discharge. The blood-stained mucoid discharge of acute intussusception is almost characteristic.

The discharge of pus per anum occurs in suppurative affections round the lower end of the rectum and also in ulcerative conditions of its mucous membrane. In complete fistulæ the surface of the anus and surrounding skin is frequently bathed in pus stained or not by fæces. In these cases evacuation of the bowels often empties the cavity of its discharge, which is found on the skin and on the fæces. In blind internal fistula, leakage of pus may occur through the anus at any time, or the fæces may be streaked with pus. In submucous fistula, the passage of fæces over it may cause its complete evacuation—a condition which renders it more difficult to palpate than when examined some time after defecation. In blind external fistula or sinus, defecation may cause its emptying, in which case the fæces and discharge are independent of one another. In ulceration of the rectum and large intestine a discharge of pus occurs, either with the fæces or, should diarrhoea be present, little else but pus and mucous may be passed. Malignant disease may give rise to a discharge simulating pus, which may contain fragments of growth. A constant discharge of pus per anum may be associated with a rectal stricture, above which the mucous membrane has become ulcerated. Pus may be discharged per anum, which has found its way into the rectum from some adjacent organ or cavity such as prostatic abscess, or pelvic abscess following appendicitis.

The *state of the bowels* as regards their regularity and frequency gives important information, which may explain the production of some lesion, or be an important symptom of others. Constipation is an important factor in causing rectal diseases. An anal valve may be torn by the passage of scybala, so leading to the formation of an anal fissure. In other cases the lining of the anal canal becomes torn; this may lead either to fissure, or may form the focus of infection for peri-rectal suppuration. Owing to the straining consequent on constipation, this latter condition is a potent factor in the production of hæmorrhoids. In children this difficulty in obtaining movement of the bowels may lead

to prolapsus ani, while its persistence prevents the cure by non-operative means. Diarrhoea proper—that is, the occurrence of too frequent stools—is not frequently the result of rectal disease, but of that of some higher portion of the digestive tract. Spurious diarrhoea frequently occurs—such as when the rectum becomes filled with fluid material, or its sensitiveness is markedly increased. Frequent straining efforts, or tenesmus, is then added. Ulceration of the rectum may cause a frequent call to stool owing to collection of discharge, while the presence of a stricture which allows fluid to pass through may be the source of frequent motions. Alternating constipation and diarrhoea is an important sign of obstruction in the bowel—the fæces accumulating till by putrefaction, or inflammatory exudation, they become liquid, which then finds its way through the narrow orifice. A malignant growth by its discharge may cause spurious diarrhoea or by its mechanical irritation when situated near the anal orifice. Constipation is often voluntarily produced in cases of fissure in ano where defecation causes such intense pain.

Alteration in the shape of the motion may afford some suggestion as to the lesion. Constipation is often associated with the passage of small hard pellets, and narrow pipe stem like stools suggest a constricted orifice. This may be at the anal margin and result from spasm of the sphincters or organic stricture. Stricture higher up may cause the same alteration, though if there is a cavity below, the fæces may remain here and regain their normal contour when passed.

In all rectal diseases it is important to consider them in conjunction with signs of disease elsewhere, as they may be merely a complication or symptom of some other lesion. Such a condition occurs when hæmorrhoids result from portal obstruction, especially that due to hepatic cirrhosis.

To be continued.

•THE TAENIA SOLIUM AND CYSTICERCUS CELLULOSÆ IN MAN.

BY

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The life histories of the *Tæniæ* furnish the finest examples of transmigration and metamorphosis; specially interesting is that of the well known *Tænia Solium*. It is thus of great pathological, though of

• Specially contributed to *The Antiseptic*.

less practical interest. Comparatively the disease is no doubt not common.

Captain A. C. Ingram, M. D. I. M. S., Professor of Pathology, Madras Medical College, and I conducted at the beginning of this year a *post mortem* examination on a man, in whom the cause of death was found to be multiple cysticercus cellulosæ of the brain. The patient exhibited symptoms of hemiplegia with facial paralysis, later of cerebral softening, and just before death those of meningitis. Detailed below are the full particulars of that interesting case which excited my curiosity to go through all the available, though scanty, material at my disposal on the subject and prompted me to put down in brief outline the results of my reading, however patchy they may be.

An Interesting Case of Multiple Cysticercus Cellulosæ of the Brain.

Patient's name—Venkata Reddy, age 50 years, male, Hindu. He was admitted on 2nd February 1910 under the care of the Second Physician, Major Donovan, M.D., I.M.S., Madras General Hospital. His residence was Park Town, and by occupation he was a vegetable seller. He died on 26th February 1910 and the *post mortem* examination was held on the 27th.

History of the case—The patient was admitted with a history of sudden paralysis of the right arm and right leg of seven months' duration. The disease was diagnosed as hemiplegia with late contractures of the right knee, elbow and the fingers of the right hand. He had in addition right sided facial paralysis and, as he was stupid and idiotic, cerebral softening also was suspected. Ten days after admission the patient became completely unconscious and a few days later, symptoms of meningitis—fever, throwing back of the head, stiffness of the neck, muscles, etc., supervened. The examination of the blood revealed only polymorphonuclear leucocytosis. No increase of the eosinophilic leucocytes was found. It is a pity that a fuller history was not obtained before the death of the patient, as it was thought to be only a common case of hemiplegia with late contractures in which symptoms of meningitis supervened later on.

Post Mortem Report.—In the cheek there was a small cystic tumour about the size of a grape.

The heart muscle was flabby, but the valves were normal. In the papillary muscle of the left ventricle one cyst was found about the size of a pea, and larger cysts were present on the external surface of the left ventricle.

Neither cysts nor special pathological changes were seen in the lungs, the spleen, the liver and the kidneys.

The Muscles.—There were numerous cysts scattered through all the muscles of the body. One was attached to the diaphragm and one to the peritoneal surface close to the pubis. Scattered throughout the intercostal muscles between their external and internal surfaces were a large number of cysts. In the muscles they were elongated, one being $1\frac{1}{2}$ " long and $\frac{1}{2}$ " in breadth, tapering at both ends. Their surfaces were rounded but somewhat irregular. In the serous cavities and between the chest muscles they were somewhat flattened oval about $\frac{1}{2}$ " in breadth.

The Brain.—It weighed $2\frac{1}{2}$ lbs. The duramater was thickened. Attached to its under surface over the right side of the cortex of the cerebrum, there was one cyst. Throughout the hemispheres were dispersed numerous cysts, all situated immediately beneath or in the grey matter of the cortex. There was, however, one in the right lenticular nucleus. In the cerebrum about thirteen on each side were found. The surface of the right optic thalamus, the right external capsule and the white matter beneath the motor cortex of the left hemisphere had a cyst in each. On the surface of the cerebellum there was a single small one. The brain cysts were very irregular in shape, many presenting racimose appearances, rounded on surface and firm.

Macroscopical and Microscopical Examination of the Cysts.

All of them were tense with thick semitranslucent very tough walls; on cutting through them a little slightly opalescent fluid escaped and the embryo could be expressed with its thin, translucent and brownish bladder attached. These little brown bladders were not tense, though they also contained a very small quantity of a clear colorless fluid. On evertting the sac, on its inner wall was found a clear, tiny, pearly white and semi-opaque spot about the size of a pin's head. It was surrounded by a thin layer of a mucoid transparent substance and was disengaged from the wall of the bladder with a pair of needles. On gently teasing it on a glass slide in normal salt solution and mounting it, the head of a tape worm resembling *Tænia Solium* was found with the transparent, homogeneous and mucoid material, devoid of cells. Then the opaque and tiny white head was transferred with the point of the needle to a clean glass slide, and mounted in glycerine and the cover glass was ringed round with thick Canada balsam. Thus were prepared the permanent specimens of the heads, which kept well by this method for a long time. As only one head was found in each of these bladders, this

belongs to the family of Cysticeri and not to that of Coenurus, in which each cyst contains a large number of heads. Evidently all the cysts are bladder worms, the cystic stage of some tape worm.

The microscopical examination of them showed each to have four suckers and twenty six hooklets. The rostellum consisted of two rows of thirteen hooklets in each. As it is the common *Tænia Solium* which has four suckers and two rows of hooklets, this also was diagnosed to be the same. The cysts are, therefore, cysticerus cellulosa, called 'Cysticerus Racimosus' by Zenker, on account of the racimose appearances presented by them in the substance of the brain.

The microscopical appearance of sections of the cyst in the heart muscle was a thick, somewhat irregular, laminated, fibrous wall situated in the cardiac muscle with internally a delicate irregular, protoplasmic, reticular layer containing a few nucleated cells which was the bladder wall of the cysticerus. In the serial sections the suckers and the rostellum of hooklets were identified.

Short Life History of Tænia Solium.

Leuckart and Castellani derive the name 'Solium' from a Syrian term Schuschl, meaning a chain, which has arrived at its present form by being first turned into Arabic and finally into Latin. But Osler is of opinion that *Tænia Solium* received its name because it was thought to exist as a solitary parasite in the bowel, though it is now known, two, three, or even more worms might occur. This is a metazoon parasitic tape-worm which, like the *Tænia Saginata*, is of common occurrence and cosmopolitan in its distribution, but not so frequent as the latter in man. It lives only in man and even monkeys are not capable of infection. The Strobilus or mature worm occurs in the alimentary canal and the head is usually situated in the duodenum or the upper part of the jejunum. The average length of the worm is about ten to twelve feet. Van Beneden records at the Academy of Copenhagen a solitary tape-worm, *Tænia Solium*, eight hundred eels long. But such long worms are unusual. *Tænia Solium*, like the rest of its class, has no alimentary canal and supports itself by the inhibition of nutritious material from the intestine, in which it lives. Its head is rounded, very small and about the size of a pin's head. It has a proboscis or rostellum surrounded by a circlet of twenty six to twenty eight hooklets, arranged in two rows of thirteen or fourteen each, the hooklets of the inner row being smaller than those of the outer. It is due to the presence of these hooklets that it is commonly called the "hooked tapeworm of man" (*Tænia Armata Humana* :—

Brera 1808) to distinguish it from the *Tænia Saginata* which has no hooks. Below the head is a narrow neck which is extremely thin and breaks very easily when the worm is handled. The worm gets such a firm hold of the mucus membrane of the intestines that it is comparatively difficult to dislodge it by the action of Felix Mas and other anthelmintics which explains the difficulty of our finding the head of an expelled worm. The neck is about half an inch long and below it fine transverse lines appear showing segmentation. Gradually the length and breadth of the segments increase and so they become more evident. The average number of them is about 800. Reproductive organs appear at about the 200th segment and mature segments are found from about the 450th onwards. Each segment is called a proglottis; each proglottis is a separate animal by itself though joined to the rest in the form of a ribbon or tape and is hermaphroditic. In the mature segments are visible the lateral ramifications of the uterus with its millions of closely packed ova. The branchings of the uterus may be rendered manifest by pressing a proglottis between two glass slides and looking at it by transmitted light. When the proglottis are mature, they sever their connections with the rest of the worm, drop off and are expelled in the fæces. For a short time, after the motions are passed, they are seen slowly to contract and elongate, but are never very quick in their movements. By their death and decomposition the ova are set free and begin to develop in a suitable environment in the tissues of an intermediary host. It is mostly in pigs that the worm passes its cysticerus stage, although, as I shall mention later, it may be found in man and some lower animals. The ova are thick-shelled and contain a granular embryo which acquires about half a dozen boring spines. The shell shows fine, circular and rod-like transverse striations. In the intestine of the pig the shell bursts, the six-hooked embryo escapes, bores its way through the mucous membrane and is conveyed either by the lymph or the blood stream to the muscles, where it lodges and develops into the Scolex or the bladder worm. The bladder worm of *Tænia Solium* found in swine is named Cysticerus Cellulosa, because its favourite seat is in the subcutaneous cellular tissues and the connective tissues between the muscular bundles; the flesh of the animal containing the cysticeri is popularly designated as "measly pork." This cysticerus is composed of a sac containing a clear fluid, within which is found a brownish bladder-like projection, having the head of the worm which resembles that of the parent in having four suckers and twenty-six to twenty-eight hooklets. It is a parasite on its journey and is agamous. Though the muscles are the usual seats of development of these cysticeri, they may be found also in the brain, liver, lungs heart and other internal viscera. The swine affected with cysticeri are said to suffer from 'measles'

and it is through the 'measly pork' which is eaten raw, half boiled or improperly cooked, that the cysticerci or rather the heads of the cystic worm are introduced into the alimentary canal of man, where they undergo further development. The cyst bursts, the head attaches itself to the mucous membrane of the duodenum or jejunum; proglottidis begin to develop one by one; the worm increases in length, but comparatively slightly in breadth; the proglottidis mature, are separated and passed per anum only to infect the pigs anew; and the whole cycle is thus completed.

Thus the life history of this parasite is an excellent example of transmigration and metamorphosis. Van Beneden has beautifully put it as follows: "In the creche (the pig) the parasite is on its passage from one station to another and that which arrives at the Lying-in-Asylum has arrived the end of its journey and is at home. We might call the pig which harbours the worms *in transitu*, the stage coach, more especially as from time to time there are some which miss it and are consequently lost in their peregrinations. In the creche the parasite occupies an organ which is closed and without communication with the outer world; it inhabits the garret of its first host; in its last host which represents the Maternity Asylum, it dwells on the contrary in the largest apartments and never ceases to be in direct communication with the exterior. Thus in the first host it is often completely immovable and under a form called Scolex; in the latter (man) it moves freely and has, in addition to reproductive organs, those which are proper to this condition called proglottidis."

The Relation between Taenia Solium and Cysticercus cellulosæ of the Pig.

Formerly it was held that the bladder worm disease of swine was due to bad food and decomposing corns or it was attributed to infection or inheritance from one pig to another. It is suggested that the Mosaic law forbidding the flesh of swine as an article of diet was based on sanitary and hygienic grounds; if the ancients knew the relation between the bladder worms and the Tæniac of man, how is it the flesh of cattle also was not interdicted, as it lodges the cysticercus of the hookless tapeworm, *Tænia Mediocanellata*? But there is no doubt the bladder worm disease of the pig has been known for centuries and probably they knew it was caused by a worm; that must be the reason why the swine's flesh was prohibited. It is only to the experimental researches and feeding experiments of Haubner, Kuchenmeister, Heller, Van Beneden, Leuckart, Cobbold and others that we owe our present knowledge of the exact relation of the cystic bladder worms of the pig to the *Tænia*

Solium of man. They have conclusively shown that the eggs of *Tænia Solium* develop in the pig into the familiar bladder worm of the muscles and also that this is the larval form of the *tænia*. It was then that the older notions disappeared to give place to accurate scientific facts, when the sanitary authorities bestowed serious consideration on the prophylactic measures to prevent the measles of the pig and the *tænia* of man. The following quotation is from Van Beneden:—"The measles in pork have been attributed to damp, to feeding on acorns, to hereditary causes, to contagion, even to injured cord and mouldy bread. All these theories we find in pathological treatises. The only cause, however, is the introduction of the eggs of *Tænia Solium* into the intestines. The cysticercus of the pig, when introduced into man, becomes a *taenia* with as great certainty, as the seed of a carrot will produce the plant, if sowed in suitable soil."

The Incidence of Cysticercus Cellulosæ in Lower Animals.

The chief host is, of course, the pig. Leuckart finds in it the favourite situations of the worms, as the breast and shoulder muscles, the tongue, the diaphragm and the legs; also the gullet, the heart and subcutaneous tissues are frequently inhabited by them, as are the nervous centres and eyes; while the viscera are, as a rule, only rarely infested. But it is not the only animal besides man which harbours cysticercus. It has been found also in apes, bears, rats and deer, though its occurrence is but rare in these animals. Though it thus becomes a cosmopolitan parasite, we are only chiefly concerned with that of its chief host, the pig, as it is the pork which gives rise to the *taenia* in man.

The Incidence of Cysticercus Cellulosæ and Tænia Solium in Man: Human Bladder Worms.

As it has been mentioned, man is not only the definitive host of *Tænia Solium*, but also the intermediary host for the cystic stage of the worm. Herein it differs from the *Tænia Saginata*. According to Leuckart no case of the cysticercus bovis in man has been recorded. But Osler mentions that it has been found twice or thrice in man. Though cysticercus cellulosæ rarely affects man, there has been recorded a large number of cases of its occurrence by Dressel, Kuchenmeister, V. Gaefe, Rudolphi, Virchow and others. The statistics of the Pathological Institutes of Germany show in a total of 9,753 *post mortem* examinations 127 cases of cysticercus cellulosæ or 1.3 per cent. Such statistics can be had in the other countries of Europe, but I am unfortunately unable to quote any in India for the amount of cysticercus infection of the pigs or of that in man. The following is a quotation from Leuckart from which

the amount of its incidence in Indian swine can be fairly guessed: "It is quite different, however, in the case of the Indian swine, as we have learned from the English physicians stationed in the Punjab. The half wild animals round the villages are specially fond of frequenting the public dung heaps. Day after day, according to Flemming, they may be seen on the look out, waiting till the natives finish operations. They hardly give them time to do so and have sometimes to be driven off by force. Since the *Tænia Solium* is hardly less common in India than the *Tænia Saginata*, it is evident that bladder worms of the pig must also be excessively common."

In India people do not consume such a large amount of pork as in Germany and other European countries, because it is only eaten by some of the lower castes of Hindus and Europeans and Eurasians. Still I am of opinion, in spite of reliable statistics on the point, that the measles in swine and the *Tænia* in man are common enough here: probably, many cases in man escape detection, though as large, if not greater, number of cases ought to occur, on account of the more insanitary conditions in most parts of India. Castellani too is of opinion that the *Tænia Solium* is common enough in Ceylon and commoner in the tropics than in the temperate zones. Considering the great want of supervision over the proper disposal of the night soil, seeing the present inefficient ways of carrying it out, and having no good water supply in most places and proper housing of the swine, it is no wonder that a large number of swine in India are affected by the bladder worms.* Therefore, many of the pork-eating population in India must harbour the *Tænia Solium*, though many of the Europeans and Eurasians have the pork well cooked for the table. Probably many cases of *Tænia* and more especially of *Cysticercus Cellulosæ* in man are overlooked.

The Special Sites of Cysticercus Cellulosæ in Man.

When once the infection occurs, the embryo may be carried to any part of the body except the bones, which are, probably, ill suited to the further development of the parasite. Though in swine it frequently inhabits the intramuscular connective tissue, in man it shows a preference to the brain. In 155 cases compiled by Stiles, the parasite in 117 was found in the brain, in 32 in the muscles, in 9 in the heart, in 3 in the lungs, subcutaneously in 5, and 2 in the liver. Dressel's reports

[*The infection of swine with cysticerci is greatly facilitated by the habits of the animal which rejects neither the human dejecta nor the water of the dung heap and by the fact that the proglottidis are voided in the faeces in great numbers and the people in many of the villages deposit their night soil any way, any where and every where.]

show the extraordinary frequency with which it affects the brain of man. Von Graefe has demonstrated its favourite sites in the eye. Next to the brain and the eye in the order of frequency come the muscles, subcutaneous tissues, the heart and the liver. Cobbold is of opinion that, though the cysticerci may develop in any situation in the human body, they occur mostly in the subcutaneous, areolar and intramuscular connective tissues; next most commonly in the brain and the eye; and lastly in the substance of the wart and other viscera. They are found strangely enough but rarely in the liver, a contrast to the hydatid cysts. In many cases, however, they are restricted to the brain and the eye. In the brain they are found chiefly in the membranes and cortex. The Sylvian fissure is specially frequented, as are also the large Ganglia, Corpora Striata and Optic Thalami. Von Graefe states that one per thousand of the patients in the Berlin Ophthalmic Hospital harbours *Cysticercus* in the deeper parts of the eye. Only one case of sub-conjunctival cysticercus has been recorded by Major Elliot, M.D., I.M.S., Superintendent of the Madras Government Ophthalmic Hospital, though he and Captain A. C. Ingram, M.D., I.M.S., furnish reports of three cases of hydatid cysts in the orbit. In the eye it may be found in the parts behind the retina and choroid, or in the vitreous or aqueous tumour, or under the conjunctiva. Except Major Elliot's case, there is not one recorded in India of ocular cysticerci. Major C. I. Williams has recorded a case of *cysticercus cellulosæ* of the tongue.

In the brain the cysticerci have over the surface curious little pouch like dilatations, which give them a racimose appearance and hence arose the name *Cysticercus Racimosus*, from its resemblance to a bunch of grapes, which was once mistaken for a new species of cystic tape-worm; but, it has now been conclusively shown by the researches of Kuchenmeister, Leuckart and others to be identical with *Cysticercus Cellulosæ*. The malformation is entirely due to its altered environment and nutritive influences of the capillaries of the brain.

In the *Union Medicale*, M. Lafitte relates a very interesting, and as regards its site, a very unique case of *Cysticercus Cellulosæ*, which was found in an encysted tumour in the palm of the hand.

Modes of Infection with Cysticercus Cellulosæ.—Autoinfection.—Insanes, idiots, children and some coprophagous persons may swallow the proglottidis. The disgusting possibilities of this mode of infection are to be borne in mind.

The tape-worm patient may readily infect himself during sleep with the proglottidis from the soiled hands into his mouth. It is also just

possible in the host of *Tænia Solium* that the mature proglottidis may be forced into his stomach in attacks of prolonged vomiting; but this kind of infection is extremely rare. Nearly three dozen cases are recorded of patients harbouring both *Tænia Solium* and *Cysticercus Cellulosæ*.

The most direct and frequent source of infection is, of course, in the eggs which find entrance into the drinking water. The soiled hands introduce the embryos into food or the eggs accidentally get into the articles of diet.* A vegetarian diet is contaminated by the embryos when the plants are manured with human excrement. Uncooked fruits and vegetables are the medium in which the embryos are introduced into man. Cobbold has finely described this source of infection as follows:—"The vegetables may have been manured with the night soil containing myriads of tape-worm eggs or they may have been watered with fluid filth into which the eggs were accidentally cast. In such cases one or more tape-worm ova will be transferred to the digestive organs, unless the vegetables have been carefully cleansed. In the same way fallen fruits, all sorts of edible plants, as well as pond, canal and river water, procured from the neighbourhood of human habitations, are liable to harbour embryos capable of gaining entrance to the human body."

So, a pork-eating individual, who acquires tape-worms, is not only a source of danger to himself, but also to his vegetarian and non-vegetarian neighbours and to the swine in the vicinity of his abode. But a man affected with the *Cysticercus* cannot possibly infect others. It is the man, who harbours the *Tænia*, dreaded as a source of infection; not he who has the *Cysticerci*. But the *Cysticercus* of the pig infects man and gives rise in him to the adult *Tæniæ* through the measly pork. So, it is found most where the pig is reared as a domestic animal and pork is eaten. Probably, the Mahomedans in India are free from it, as pork is religiously interdicted in them as to all the higher classes of Hindus.

(To be continued.)

[* This mode of infection is well illustrated by the case of sub-conjunctival cysticercus under the care of Major Elliot, who was kind enough to allow me to examine the patient. The patient was aged 24 years, male, and a Pondicherry Frenchman. He gave a distinct history of injury to the eye six months ago, which resulted in the formation of a small tumour, which grew to the size of a grape. The tumour was suspected to be an inclusive cyst, excised, and sent to the Pathology Laboratory, Madras Medical College, where it was diagnosed to be a *cysticercus cellulosæ* by Captain A. C. Ingram. After repeated questioning as to the source of infection I elicited from him the history of his having been in China for three years, whence he returned to Pondicherry six months ago, and of having entertained in his services a Chinese servant who was passing proglottidis of a tapeworm. Evidently the servant had infected him. Autoinfection was eliminated by giving him Felix Mass.]

Our Contemporaries.

MEDICINE.

Potassium Iodide in Ozæna.

W. P. PORCHER.—As potassium iodide causes coryza it occurred to the writer to give it for the purpose of maintaining the fluidity of the nasal secretion and enabling the crusts which form in atrophic rhinitis to be expelled. He found it necessary to give it in large doses. Many patients took from 600 to 900 grains daily before the nasal secretions would remain fluid, and this without any noticeable ill-effects, but, on the contrary, gain in weight and improvement in the general health. In all cases the formation of crusts ceased. The drug was given in 6 or 8 oz. of water after meals. The initial dose was 20 drops of a saturated solution, which was increased until the nasal secretion became so fluid that the crusts were expelled. Every effort was also made to open up the sinuses as freely as possible, to give free outlet to all inflammatory secretion. The following is an example:—

A robust girl, aged 18, suffered from scab formation in the nose for a year. Both nostrils became impacted with scabs daily which could be extracted only with difficulty. Iodide of potassium was given in rapidly increasing doses. The anterior ends of both middle turbinates were removed successively so as to give free outlet to all inflammatory secretions, and the ethmoid sinuses were carefully curetted. The nostrils were also thoroughly cleansed twice or thrice a week with a solution of mercury bichloride and sodium bicarbonate. After each operation, and as she became more under the influence of the iodide the scabs rapidly lessened until she had scarcely any and went for days without the use of the douche. Subsequently the scabs entirely disappeared. The largest amount of the iodide taken was 180 grains daily.—*The Medical Review*.

X-Rays in Ascertaining Death.

VAILLANT points out the X-rays facilitate the diagnosis as to whether death is apparent or real. In the living subject, whether child or adult, the stomach and intestines are not rendered visible by radiography on account of their constant movement and transparency. But as soon as life has ceased, the abdominal organs become visible owing to their immobility and to the phosphorescence of the gases which they contain and the intestinal convolutions with their contents can be plainly distinguished.—*The I. M. Journal*.

Formalin In Ringworm.

SINCE the introduction of the X-rays treatment of ringworm the various antiseptic and parasiticide remedies have fallen somewhat into the background. Dr. Mackinnon, who writes from Cape Colony, publishes in the *Lancet* a brief description of a method in which he has great faith; it seems well worth trial by those who, as he persumably is, are not within the reach of a thoroughly equipped electrical plant. The drug he recommends is not mentioned in the latest edition of the standard British work on skin diseases, and practitioners in Great Britain may therefore not be familiar with it. The area of the skin affected is washed with spirit and then allowed to dry. Then with a soft camel-hair brush a 40 per cent. solution of ordinary Formalin is painted on, and the head is meanwhile placed in such a position that the liquid will not run off. According to the author, one such application is sufficient as a rule to effect a cure, but if there is any doubt he repeats the application in five days. There is sometimes some smarting in young children, and the skin often scales off from the irritating action of the drug; but these are only slight drawbacks from a process which is described as clean, rapid, and effective.—*The Therapist*.

A Case of Temporary Bradycardia, with Ventricular Asystole.

By

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By the courtesy of Dr. Angas Johnson, Hon. Physician, I am enabled to report this case. A. B., a man *æt.* 60, ostler, is a native of Aberdeen, Scotland. He was admitted on September 19th, 1910, complaining of pain in the chest. His symptoms date from one week ago, when he was first aware of a peculiar sinking feeling in the chest. This sensation lasted only a few seconds, but came on several times a day, especially after exertion, and on one or two occasions had been so sudden and severe that he fell. In a severe "turn" he would almost lose consciousness, and in all the attacks he had a feeling of absolute helplessness and loss of power. His past history was quite good, his only complaint being of chronic pain in his right knee-joint of many years' duration. This was found to be due to old-standing osteo-arthritis. There is no history of syphilis and only a moderate amount of alcohol is consumed by the patient. He has always been a hard-working abstemious man.

On examination it is noticed that the man looks his age and is neither emaciated nor fat. His hair is turning grey, arcus senilis is fairly well marked. The temperature and respiratory rate are normal. Nothing abnormal was found in his nervous or alimentary systems. His urine had a specific gravity of 1018; there was neither albumen nor sugar, and the daily quantity was normal. His chest has a poor inspiratory expansion and the lungs are hyper-resonant, while a prolonged expiratory murmur is further evidence of emphysema.

It is in his circulatory system that the most remarkable change is noted. On examining his pulse the day after his admission it was noted that there was a very marked irregularity in time. The pulse might be described as consisting of groups of a varying number of regular beats separated by periods of pulselessness varying in duration from a single intermission to 28 seconds, the latter being the longest observed duration of a pulseless interval. The right pulse was markedly fuller than the left, but this was due probably to an anatomical difference in the arteries. The pulse rate, as can easily be realised, varied from minute to minute, but averaged about 20, though at times only 14 beats per minute were recorded. The blood tension was not increased.

On listening over the heart during a pulseless interval no sound could be heard. The heart showed nothing abnormal, the apex beat was concealed by the emphysematous lung, but the sounds, although distinct, were free from adventitiæ and there was no evidence of hypertrophy or dilatation.

Throughout the second day of his stay in hospital the patient had constant peculiar seizures which were synchronous with the longer pulseless periods, and which he said were similar to the peculiar attacks he had had before admission. Each attack appeared somewhat as follows:—After about five seconds of pulselessness the face would become ashy grey and the expression one of extreme anxiety, a few seconds later slight cyanosis appears and the anxious expression becomes one of absolute ~~stupor~~ ^{insentiment}, the limbs twitch and the patient utters deep groans, saying "Oh, dear! Oh dear!" There is no definite convulsion. In the longer seizures a clammy sweat breaks out. Then suddenly the pulse returns at the wrist and the patient says, "I am all right now," and from his point of view certainly remains so until the next attack three or four minutes later. He describes the præcordial sensation as one not of pain but of "goneness" or "sinking," and states that towards the end of an attack his senses leave him.

There was a well-marked, visible jugular pulsation, whilst the radial pulse could be felt, and even during the pulseless periods I fancied

that I saw a sort of regular flicker over the jugular bulb which might have been caused by pulsation of the right auricle. Unfortunately at that time I had no polygraph available and could not therefore confirm the presence of auricular systoles.

Subsequent history.—The patient was given no drugs, but kept in bed. Six days after admission the pulse was quite regular and 60 per minute. In a week it rose to 76 and has remained there ever since. There have been no further attacks, and he was discharged four weeks after admission. On examining him on September 28th with McKenzie's polygraph it was found that the A. C. interval was normal and there was no irregularity of any kind.

Professor Keith has investigated cases of heart block and found that the bundle of this may be affected in several different ways. 1. By involvement in a chronic inflammatory reaction caused by rheumatism or syphilis. 2. By acute inflammation and necrosis in pyæmic affections. 3. By arterio sclerosis affecting the special artery to the bundle, which is a branch of the right coronary.

It is hard to know whether this was a case of true heart-block. Theoretically the loss of the pulse may have been caused by a failure of ventricular contraction alone, or of both auricle and ventricle. If the former were the case heart-block was present; if the latter then the auricular asystole was probably caused by vagus inhibition. Atropine was not administered; and we were unable to be certain whether the auricle was beating during the pulseless periods. Personally I incline to the idea that the asystole was vagal in origin, because in most recorded cases of well marked heart-block the pulse is very slow but fairly regular, the ventricle failing to respond to each alternate auricular contraction, or responding only to 1 in 3 or 1 in 4. Sometimes, indeed, the ventricle beats quite irrespective of the auricle, at a rate of about 18, which appears to be its own intrinsic rate. In this case, however, when the ventricle did contract, the rate was at about 60 to 70 per minute, but the regular pulsations were interrupted by pauses of varying duration. Later also we have the polygraph record, which shows no increased conduction time of the cardiac impulse. —*The Australasian Medical Gazette.*

The Pathology of Dropsy.

In a very long paper on "The Blood and Urine in Dropsy," published in the *Medical Chronicle*, Dr. R. Lakin deals with many aspects of his complicated theme. His general conclusions on œdema are worth attention, especially as they contain a point in treatment which has, it

appears, already been suggested by Dr. Melland, but is as yet little known. With œdema, says Dr. Lakin, NaCl is practically always retained in the body; as œdema disappears the excess of salt is removed, and its output rises above the intake. That this NaCl retention is, however, not necessarily dependent upon the presence of œdema, or *vice versa*, is shown by certain facts. Thus when dropsy has disappeared the NaCl excretion is not uncommonly markedly subnormal, and also there may be marked œdema without any retention of NaCl. Also in certain cases the output of NaCl has been observed to increase as the dropsy becomes more marked. The conclusion is that salt excretion has not always the same significance in the genesis of œdema. Imperviousness of the kidneys to chlorides and consequent retention of the latter is the cause of many cases of œdema; but many other cases are due to entirely different causes, and even where chloride retention has some effect it may be playing but a subsidiary part. Hence the varying opinions as to the efficacy of salt-free diet in cases of dropsy. Now NaCl output is reduced by 50 per cent. in many cases of simple chlorosis, even without œdema, and Dr. Melland has had beneficial results in this disease from a salt-free diet. Hence Dr. Lakin is led to the hypothesis that primary salt retention, in association with other factors, may play an important part in the ætiology of chlorosis.—*The Hospital.*

Poliomyelitis: New Facts concerning its Etiology, Early Diagnosis and Treatment.

BY

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WITHIN the last decade, over eight thousand cases of this disease have occurred; and, of these, five thousand were in the United States of America. It is likely that at least a thousand people have been attacked in Pennsylvania alone this year; and in the District of Columbia a committee appointed to study the outbreak there has cognizance of over five hundred cases.

Thus, the situation is a serious one; and every new fact bearing upon the disease should be carefully weighed by each of us, until we have found means to prevent the spread of infection or have discovered a method of arresting the invasion before the nerve elements are destroyed.

Etiology and Pathology.—The disease is not a primary atrophy of the anterior horn cells from acute toxæmia. It is a constitutional disease

due to a living virus which causes an inflammation of the connective tissues of various organs, including the lymph glands and intestinal follicles. It is accompanied too by congestion of the spleen and of the mucus membranes. The meninges are inflamed, and the whole central nervous system is more or less hyperæmic. The destruction, however, vastly preponderates upon the region of distribution of the anterior spinal arteries, which supply the anterior cornua, the injury to the motor cells in which produces the paralysis.

Those cells around which the inflammation is not so severe as to produce more than œdema quickly recover as the invasion ceases; and this accounts for the rapid return of power in some cases. Other cases where return of power is less rapid are accounted for by the reintegration of a destroyed axone the pyramidal cell of which has escaped necrosis. In other cases it is the fibers of the pyramidal tract which are mainly involved as they proceed toward the cells in the cornua, which themselves in part escape. Such a case is characterized by exaggerated reflexes and sometimes by Babinski's toe sign. Still another set of fibers may receive the chief impact; I refer to the rubrospinal fibers, which also pass to the anterior cornua cells, through which they regulate muscular tonus. The loss of their influence leads to hypotonia and tremor, without paralysis so long as the pyramidal cells themselves are not implicated. Of course, the clinical picture may vary in different parts of the body in accordance with the differing incidence of the inflammatory exudate upon different segments of the cerebrospinal axis; and, in the same segment, some cells may escape where others are attacked.

Conveyance of the Disease.—The salivary gland has been used by Levaditi to convey the disease from one monkey to another. In the Rockefeller laboratory they have conveyed the virus by spraying into the nares an emulsion of nasal mucous membrane from a diseased animal. The most infectious material, however, is the spinal cord. The cerebrospinal fluid is infective only for a few days.

Carriers—It is believed that the disease may be conveyed by the medium of a healthy carrier. Some hold very strongly that abortive, undiagnosed cases are responsible for the spreading of the disease so widely. If this is the case, isolation of ascertained cases must be of little avail, especially as there are other facts which seem to point to the superfluity of isolation as at present conceived against this disease. An instance will make this clear.

Non-contagiousness.—A child aged 11 was attacked with acute paralysis at Bethesda, Maryland, this summer. She had been playing out of doors all day long for weeks with seventeen younger children,

seven of whom were her own brothers and sisters. All of these were under careful observation by Dr. John Lewis, the Health Officer of the district, with whom I later saw the case. Not one of these children developed any sickness which would in the least point to poliomyelitis. No contact with another case could be traced, and none of the children had been to town for some weeks. It was the first case recognized at the time in the neighbourhood.

Again, in the Washington Children's Hospital, some twenty-five cases of poliomyelitis have been admitted this summer, many of them in the acute stage. They were placed in the common ward, and at first no special precautions against infection were adopted. No patient in the hospital contracted the disease at that time. Latterly, spraying the nares has been employed, and a certain isolation has been maintained, in spite of which I understand that one case of poliomyelitis developed recently in a child soon after it left the hospital.

I need not instance further, for the number of examples where intimate contact has led to contagion is legion.

Contagion—On the other hand, instances where known single contact has led to the disease are not lacking. The Stromsburg, Nebraska, outbreak is the most striking example; and another has just occurred and was observed by myself, during our study of the Washington epidemic.

At McKendrie, Md., in the practice of Dr. A. H. Perrie, the child of a railroad brakeman became febrile and paralyzed on August 1st. Fourteen days before, she had visited Chesapeake Beach, to which many Washington people resort. Nine days later, this child's cousin was attacked. The contact consisted of a visit to a church fair where the children were together some hours. In the meanwhile, the doctor's own daughter, about August 8th, was attacked by the disease, and later still another family who had been in contact had one child paralyzed. In the Washington report will appear the full history of the epidemic.

Proper Isolation.—It is manifest from facts of this nature that either (1) the number of immunes to this disease is very great, or (2) that certain bodily states render infection possible, or (3) that the manner of conveyance is very different from that against which precautions are being taken by those who advocate isolation. Proper isolation would consist of closing of the avenue of infection, and, as we do not yet know this in nature, only isolation from everything can possibly safeguard. It is possible that the disease is really conveyed by an insect either as carrier or intermediate host. No one can forget the complete failure of quarantine to prevent the spread of yellow fever until the false belief that it was carried by

fomites was supplanted by the knowledge of its conveyance by the *Stegomyia fasciata*. Another instance is the very simple conveyance of Texas cattle fever by the *Boophilis bovis* tick under conditions formerly thought so extraordinary.

Is Noxa Protozoan?—Besides, evidence is not wanting to support the hypothesis that the infective agent may be a protozoan, in which case an intermediate insect host would be presumptive.

This evidence consists of the nature of the pathological reactions of the central nervous system. That there is a lymphocytosis of the cerebrospinal fluid during the acute phase is now well known. But no thorough study of the cytology either of fluid or neuraxis has yet been published. From 11 cases in different stages of evolution the subarachnoid fluid has been taken by the Washington Committee. A complete study of the cells has been made by Drs. Hough and Lafora. The method used is the precipitation of the cells by absolute alcohol, the imbedding of the precipitate and its section and staining, as if it were a tissue. Even in the earlier stages there is some pleocytosis. The polymorphonuclears are abundant (15 per cent.). It is likely that they originate in the meninges themselves on account of the inflammation there. After a few days, these cells are less numerous, and the pleocytosis consists mainly of lymphocytes, with some plasma cells. In some cases, mast cells are found. It is phagocytic macrophages which cause the disappearance of the polymorphonuclears. As many as twenty may be found digested in a single cell, where they exhibit pyrominophile and fuchsinophile reactions, and may assume forms resembling the Leishman-Donovan bodies found in some protozoan diseases. In the acute phase it is usual to find altered erythrocytes due to minute hæmorrhages where the inflammation is intense. Later on, altered lymphocytes, *körnchenzellen*, etc., occur.

A moderate increase of pressure was found early in the disease; and there was usually an increase of the protein content sufficient to react positively both by the methods of Nonne-Apelt and Noguchi.

No bacteria appeared in the stained preparations. Hough and Lafora are of the opinion that these appearances are in favor of the protozoan nature of the virus of poliomyelitis. Their researches will be fully reported in *Folia Neurobiologica*, and along with the report of the Washington Committee.

Early Diagnosis.—The earliest symptoms are usually one or more of the following: great weakness with apathy or irritability, sometimes including photophobia; sometimes slight coryza; marked insomnia is

often present, and this in a child without fever or intestinal trouble should excite suspicion. When this is followed by great weakness, and restlessness later occurs, suspicion is still stronger, and, when profuse perspiration begins without a very high fever, I believe that the diagnosis should be made, more especially if any reflexes have diminished or Kernig's sign occurs.

Cases of poliomyelitis have often been called *rheumatism*. This is on account of the severe pain and great tenderness which occur when the meninges are much inflamed. The distinction, however, is quite easy; for in acute rheumatism the joints themselves are inflamed, and hence are hot, red and swollen; whereas in poliomyelitis there is no special heat, redness or swelling of the joints or limbs. Besides, there is always a modification of the reflexes in poliomyelitis, and as soon as the horn cells of any segment are invaded the reflex arising in that segment is first diminished and later suppressed, often several hours before paralysis occurs. When the attack is mainly on the pyramidal fibers, either in the affected segment or high up in the cord, the reflexes may be exaggerated in that part of the body supplied by those fibers. Again, before the meningeal inflammation has extended to the cord, there may be for a time an exaggeration of reflex activity.

Diagnosis from Cerebrospinal Meningitis due to the Diplococcus Intracellularis. The Cerebrospinal Fluid.—In cases where restlessness and hypersensitivity usher in the illness this diagnosis is sometimes impossible, and, rather than lose valuable time in awaiting further symptoms, the meninges should be punctured and the fluid examined. Only in that way can we be sure of saving the child without damage, if it is the meningococcus which is at work. But, even in poliomyelitis, a lumbar puncture is rather an advantage than otherwise, for it relieves the pressure within the cerebrospinal sac, and probably diminishes congestion of inflamed structures. Examination of this fluid, too, may afford information, according to Flexner, there usually being a marked lymphocytosis in monkeys, the proportions being: polynuclears 40 per cent., lymphocytes 40 per cent., large mononuclears 15 per cent., eosinophiles 5 per cent.; while the blood-count was polynuclears 60 per cent., mononuclears 25 per cent., lymphocytes 12 per cent., eosinophiles 3 per cent., occurring with a distinct leucopænia. This diminution of white corpuscles did not disappear until the acute stage of the disease subsided. It will be noted that these findings are different from those revealed by the more thorough examination in human beings by the Washington Committee. Inoculation of a monkey with cerebrospinal

fluid from an abortive case may be used for diagnosis of a dangerous carrier. Vomiting is often an early symptom, and headache is the rule. Rigidity of the neck and Kernig's sign are most marked in the meningeal type of onset. In some cases the extremities are cold in spite of the general fever.

TREATMENT.

I. *Acute Stage*.—There are two distinct indications: (1) The first is to *preserve life and prevent paralysis*. We have no certain means of accomplishing these objects; and the students of immunity are not hopeful of making a serum either to arrest the disease or to prevent its inception. Hexamethylenamine has completely failed to arrest the inflammation in cord and meninges, although it has been thoroughly tested in the Washington epidemic this year. There is, however, a remedy of which we may hope that further trial will show the use. I refer to mercury, the power of which over some infections has become better realized since it has been employed by injection into the muscles or veins.

A *Case*.—I have, however, only had opportunity to test it in one case of poliomyelitis during the acute phase. It was done because of a sudden advance of acute ascending paralysis in an adult who had apparently improved on the preceding day, the fifth of his disease. By lumbar puncture also, 10 c.c. of cerebrospinal fluid were withdrawn. Headache and nausea were at once relieved, and the paralysis ceased to progress, while the temperature fell steadily. During three days, five doses were given of mercury bichloride of gr. $\frac{1}{8}$, and $\frac{1}{4}$, alternately. In another case of the same kind with which I was associated, the remedy was not tried, and the disease progressed to respiratory paralysis and death on the fifth day. Both these cases were adults seen in consultation, the first with Dr. John Lewis, of Bethesda, Md., the second with Drs. A. B. Hooe and Roy, of Washington. It is true that the injections would greatly perturb a child who is hyperexcitable from meningitis; but a temporary disturbance is preferable to paralysis or death, and much less pain is produced by the small needle used than by the injection-syringe needle required when diphtheria or meningococcus diseases are in question.

If the disease is protozoal, the *rationale* of mercury is evident; and it is possible too that some arsenical derivative may be applicable.

Many have recommended cupping and other derivatives to prevent spinal hyperæmia. The *rationale* of this is at least doubtful when we reflect that the hyperæmia is nature's defense against further invasion.

Special indications are: The constipation and retention of urine; which should be met by copious enemata, and not by drugs to stimulate peristalsis, which is deficient not because of local toxins, but because of interference with innervation at the center. Sometimes, a catheter is required; but usually a flow from the bladder will follow a third or fourth enema, the first indeed often failing to expel any feces.

(2) The second indication is to *minimize the pain and irritability* of the attack, and to secure rest and sleep.

The warm bath or hot pack is most efficacious in some cases. It not only acts as a revulsive to soothe the nervous system and tranquillize the circulation by its warmth, but it has the mechanical function of supporting the limbs so evenly that there is no drag to stimulate afferent nerve impulses and add to the irritation due to the meningo-myelitis.

Other measures which secure the same end are water or air beds; maintenance of the limbs in a semi-flexed posture by soft pads, and support of the feet by a firm one. Support of the back by a firm cushion, well warmed and not too hard, gives great relief, and the proper adjustment of the pillows under the neck is of great importance.

An immobilizing jacket has been of great service in giving comfort to some little patients.

An ice-cap sometimes causes great distress and its use has no justification except the thoughtless routine of orthodoxy.

Finally, after the inflammation has subsided—usually in about a week—*galvanism* should be used as a direct means of diminishing the pain which is derived from the stretching and sagging of joints, ligaments and muscles caused by the loss of tonus in the muscle groups paralyzed, sometimes aggravated by hypertonus of antagonists not paralyzed. The relief given in this way is surprising to those who have not tried it.

An adult case seen with Dr. Ammerman, of Washington, would gain a tranquil repose of over two hours after half an hour's application of galvanism to his paralyzed muscles. At other times, restlessness and pain were so great that only by morphine could he secure any sleep at all, and his day was a perpetual misery. The hot bath was unavailable at that time.

II. *Treatment of Residual Paralysis*.—Little children are reluctant to essay movements of a partially disabled limb. When it is an arm, they let it hang and use the other; if it is a leg, they make no effort and prefer to be nursed and waited upon. Suspension in water greatly facilitates movement when the muscles are feeble. We in Washington can fully confirm the experience of the New York Committee, who found out how easily the child could accomplish little movements in a bath which he was unable even to attempt when his limb was not so supported; and it is very easy for the mother or nurse to invent little play games to maintain the child's interest for an hour at a time while suspended in a warm bath. There is no danger in this so long as the water is maintained near blood-heat. The skin does not macerate, and the effect upon nutrition is most favorable. To stimulate the circulation in the limbs, they should be massaged several times a day. From this procedure one must not expect to procure regeneration of atrophied muscle and nerve. Surgeons know well that muscles supplied by a cut nerve atrophy and will not regenerate although they are massed till doomsday.

Galvanism.—If, however, they are galvanized from the beginning, atrophy will not occur; for the exercise of their contractile functions maintains the integrity of the muscle elements, and it is only galvanism which can excite contractility when the motor nerve and its endings have degenerated. If treated by galvanism from the beginning, a living muscle cell will greet each regenerated nerve-fiber which pushes to its destination. If galvanism is not used, only the envelopes of dead muscle spindles will be met with. The time for these to regenerate must then be added to the duration of every case not treated by galvanism.

It is necessary to restate these simple physiological facts on account of the vogue of the pernicious statement that no treatment of poliomyelitis should begin until four months have elapsed. This doctrine is another instance of unthinking orthodoxy. But, if the elementary physiological considerations just presented make no appeal, I need only cite the high authority of Erb, Bergonie, Zimmern, and Zappert, the distinguished Viennese pædiatrician (added to that of Duchenne's final experience), who makes a practice of galvanizing the paralyzed muscles just as soon as the acute symptoms subside.

Mode of Application.—The current should be applied only to those muscles which are paralyzed, and the negative pole should be placed over the muscle itself near its tendon of insertion, while the positive pole is attached to a large electrode applied over the abdomen or other

indifferent point. It is useless to stimulate the motor point except during the first two weeks, *i.e.*, before nerve-endings have ceased to be stimulated on account of degeneration.

Of course, contractures and other deformities should not be permitted, and, even when paralysis is complete and irrecoverable, they can be largely prevented by the maintenance of proper posture. Orthopædics is the resort of despair and, in many cases, the result of neglect of proper and early treatment in preventing deformities; but the weak muscles may be reinforced with advantage by elastic suspenders even after a few weeks.—*Monthly Cyclopædia and Medical Bulletin*.

The Early Diagnosis of Phthisis*

BY DR. JOHN A. MACGREGOR, LONDON, ONT.

Mr. President and Gentlemen:—In thanking you for the honor which you have conferred on me by requesting me to present a paper before your Society, I am fully cognizant of the serious responsibility which I have incurred in accepting. No apology seems necessary for reviewing the data which will lead to an early recognition of chronic pulmonary tuberculosis, a condition which too frequently presents itself in a hopelessly advanced stage.

Probably in no other disease does the ultimate restoration to health and usefulness depend so much on detection in its incipency. In quite the majority of cases the evidence available is sufficient to furnish this early diagnosis if we appreciate the significance of the early symptoms, conduct a careful physical examination—often on more than one occasion—and interpret the import of the early physical signs. Unfortunately we are all, on occasions, more or less remiss in our duty in this respect and delayed and erroneous diagnoses are too often responsible for the incidence of the later phases of softening and excavation which so greatly impair the prospect of recovery.

The early diagnosis implies a recognition of the "incipient" case in which the lesion is a limited, usually apical or sub-apical, infiltration and is associated with but slight, or even no, constitutional symptoms.

In quite a number of cases constitutional manifestations appear in advance of the corroborative physical signs. In not a few cases physical signs of greater or less extent, and denoting more or less activity encountered in the absence of general symptoms.

Of importance is the discovery of a more or less intimate exposure to a possible source of infection. This may be in the home or place of

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employment. It may be in the person of a parent or other relative, a fellow-employee or a personal friend. In but few instances can the source be said to be unknown. The information may not be obtained at the first inquiry. It may have been forgotten and be called at a later visit. The illness of the suspect may have passed muster for "chronic bronchitis," "asthma," "stomach trouble," and the tuberculous nature may be denied. However, an inquiry may reveal a condition of debility or a cough of long standing which will in most cases justify one in characterizing the process as tubercle.

Of the early manifestations, a vague, ill-defined onset, with loss of energy, inability to sustain physical or mental effort, slight impairment of nutrition and digestive disturbance is all too easily misinterpreted and the patient informed that he is run down or suffers from debility or neurasthenia. The development of pulmonary symptoms in those in apparently good health we are too ready to look on as an obstinate cold or an attack of grip which tends to hang on. The patient who suffers from a series of colds, more especially if they persist during the summer, or the subject of anæmia or chlorosis, should be subjected to rigid general and physical examination.

A large percentage of patients who later develop tuberculosis are habitually light in weight, a condition which is probably predisposing. Slight loss of weight noted by weekly appeals to the scale occurs in many cases, but the average weight may be maintained, or a considerable gain occur, in the presence even of a moderately active lesion. Pronounced loss of weight is a feature rather of the later phase, as is also any notable loss of strength.

In the incipient stage a regular noting of the temperature is of great importance, and I cannot emphasize this too strongly. The observation should be continued over a period of some few days, and preferably at two-hour intervals. It is necessary to see that the thermometer is properly placed, and is maintained so for three minutes, as the registration of slight degrees of fever requires a longer time than the more pronounced elevations. The morning temperature, and, not infrequently, the afternoon as well, may be subnormal—97° to 98° F.—in those with impaired metabolism, and this may, in conjunction with other findings, be of much diagnostic value. Generally speaking, a daily general range of temperature, slightly above the normal, should direct suspicion towards tuberculosis. These rises, slight though they may be, may be noted only following physical exercise, or at the time of the menstrual period in women.

Of scarcely less importance is the observation of the pulse. At times it is of normal frequency or shows some lowering of tension. In the majority of cases there is more or less tachycardia or, what is of equal importance, a condition of irritability, the frequency rising to 80 to 100 with but slight physical exertion or emotion.

Sweats are significant of secondary infections connected with the late stages; but quite early one frequently observes a clammy moisture of the palms of the hands.

The presence of cough may be denied by the patient, but commonly one notes its unconscious occurrence during the examination as a short hack, with or without some moisture.

The expectoration, if any, in early cases possesses no diagnostic characteristics. It is mucoid and frothy and of bronchial origin, and the absence of tubercle bacilli, even on frequent examination, is not to be construed as negating phthisis. They appear only when the tuberculous foci are breaking down, and are a late manifestation.

A more or less persistent huskiness of voice, though slight, should excite suspicion, even though the laryngoscope reveals only a catarrhal process, and demands a thorough investigation.

Hæmoptysis is not infrequently the startling feature which determines the patient's first visit to the physician or brings the physician to a sudden realization of the gravity of the situation. In most instances, especially if it is at all pronounced, it is significant of the later excavative period, but it may occur comparatively early as a staining of frothy bronchial sputum. One must be careful to exclude other causes, such as a slight epistaxis, mitral stenosis, or an acute catarrhal process of the upper respiratory tract as causes.

In the great majority of cases in which the hæmoptysis is supposed to denote the inauguration of a tuberculous deposition, it is actually the evidence of renewed activity in an old, more or less quiescent, lesion.

Little or no stress can be placed on vague pains in the chest wall, which may be complained of early. They are noted as the manifestation of a phobia. Rarely they may be the result of an early apical pleuritic involvement. Of paramount importance is the recognition of the tuberculous nature of the so-called primary pleurisies of both the dry and serous varieties. They are not rarely credited to exposure to cold or to rheumatism.

The exudative type is frequently latent, and if the effusion is but slight is commonly overlooked unless the physical examination is care-

fully conducted. This pleuritic involvement is often the precursor or associate of an apical localization as well as the basic fibroid phthisis.

In these early cases the examination of the blood offers nothing of diagnostic importance. The pallor of the patient may be in marked contrast to the actual blood findings, which frequently are normal. A slight anæmia of the secondary or of the chlorotic type may be present while the leucocyte count remains within the normal range.

The appearance of physical signs adds corroboration to a diagnosis which should be pretty well established as a rule from the history and general symptoms. As early evidence they are not as a rule of themselves of signal value, as by the time one can, from the physical signs, say that the patient is suffering from phthisis in the so-called first stage, excavation is already proceeding. At an early period, physical examination may yield a completely negative result, a point not to be overlooked. One is too often ready to declare the lungs "all right" on an all too superficial examination. In all instances the patient's chest should be bared to the skin, and it is often wise not to venture too positive an opinion without one or more than one subsequent examination.

Inspection and palpation furnish but little information in incipient cases, though occasionally one may note some diminution of apical respiratory excursion or a slight retraction.

Percussion as usually applied is not of much value until quite extensive pulmonary infiltration has occurred, but one may elicit slight narrowing of the "suspender" zone of resonance, and with greater care as to technique, some muffling of the normal resonance or even slight elevation of pitch may be determined with even very limited lesions.

The earliest physical signs are usually furnished by a careful auscultation. Harshness of respiration, especially involving the expiratory murmur, which may or may not be prolonged, with an apical limitation, bearing in mind the physiological differences between the two sides, is suggestive. The addition of an occasional sticky click or a pleural friction, or ever so few fine rales at the end of inspiration, which may be brought out only with a deep inspiration or after a cough, is ominous.

An increased transmission, together with an elevation of the pitch of the whispered voice, is a valuable sign which can be elicited early.

Definite bronchial breathing denotes considerable consolidation of pulmonary parenchyma, and with or without any notable moist sounds, is a manifestation of a well-established lesion.

Much is claimed by some for the fluoroscope in detecting incipient cases, but though I have had no personal experience with its use I am of the opinion that a lesion of sufficient extent as to make itself evident by this means would give rise to significant physical signs. The promiscuous use of the tuberculin as a short cut to a diagnosis I cannot too strongly condemn.

But with a provisional or established diagnosis based on various combinations of symptoms and physical signs one may seek confirmation by recourse to some of the specific tuberculin reactions. With the original subcutaneous and the more recent Von Pirquet methods of application I am not familiar, but I am convinced of the value of the Moro and Calmette reactions. The objections to the use of the latter urged by some may be well sustained, but my own experience, based on a limited number of cases, confirms the opinion that, used in eyes free from irritation, its employment is quite harmless, while its reaction is quite distinctive.

Unfortunately these reactions do not distinguish between healed lesions and those more or less active. The absence of reaction in the terminal phases, owing to the exhaustion of the cell activities, is of little moment, as the tuberculous nature is usually only too readily recognised.

Here again let me impress the value of the general manifestations in the early recognition of pulmonary tuberculosis. A period of ill-health with disturbance, though slight, of pulse, temperature and digestion, loss of relish for food, trifling physical incapacity, slight loss of weight and anæmia precedes, in the majority of cases, the development of the physical signs which at first are often indefinite.

The laity to a great extent, and, unfortunately, many of the profession, appreciate pulmonary tuberculosis only when cough, expectoration, wasting, hectic and exhausting sweats become prominent features and signal a stage of the disease precluding the re-establishment of even a reasonable measure of health, or what is, unfortunately, more common, presaging an impending dissolution.

In conclusion, gentlemen, I shall be grateful to you for suggestions which will be of further aid in the early recognition of this scourge, so capable of amelioration or cure in its incipency, but which, when it has progressed to its later stages, levies so extortionate a toll of human life and adds so much to the burden of human suffering.—*The Canadian Practitioner and Review.*

Insects as Carriers of Tropical Diseases.

BY

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GENTLEMEN,—I propose this afternoon to lecture to you upon the subject of the part played by insects in the spread of tropical diseases. The part which they play is a very great one, and it is no exaggeration to say that most of the important tropical diseases owe their existence to, or part of their stage has to be passed in, some insect as an intermediary. The vast bulk of diseases in this country owe no such relationship to insects, though perhaps some are more commonly spread by means of the direct transference of their germs by flies than is generally supposed. If we take the simplest instance of an insect transmitting a disease we may choose the case of typhoid fever or cholera and the part which flies play in the spread of those diseases. This part is a very real one. During the war in South Africa the large epidemics of typhoid were, without doubt, to a great extent produced by flies. How this should be is easy to see. For example, flies settle on typhoid stools in trenches or faulty latrines; then they go into the adjoining tents or buildings, and next settle on the milk or other food. Milk being a good cultural medium for the bacilli, the latter multiply there; and then when the milk is drunk later the individual ingests a powerful culture of the germs, and in all probability in due course goes down with typhoid fever.

FLIES THAT CARRY CHOLERA.

It is the same with cholera; in that instance Koch's comma bacillus is transferred to the food by flies. Typhoid, cholera, and quite likely bacillary dysentery as well, all may be spread then by the direct transference of their specific germs from the fæces by the feet of flies to the food of man, and thus you will at once see the importance of preventing the access of flies to food and into houses generally. Anthrax is another disease where flies have been known to help in its spread. There is one instance at least on record where this actually happened. A man in a field crushed a big bluebottle on the back of his hand, and where he crushed it a malignant pustule afterwards developed. Subsequent investigation showed that there had been a dead cow in the next field which had died of anthrax, and the fly evidently had been on this carcase, had got anthrax bacilli on its legs, had flown from there on to the back of the man's hand, and when it was crushed some of the bacilli had got into one of the hair follicles and so set up the malignant pustule. These

are examples of the feet and legs of flies acting in much the same way as the inoculating-needle in the laboratory—taking a germ from one place and transplanting it to another. Another disease which has recently been shown to be spread by insects—by fleas—is plague. This is not quite so simple as the cases just mentioned, as the plague bacillus apparently passes through the stomach and intestine of the flea first. During its passage it does not undergo any special development, however, so it may be more or less classified in the category of a direct transference of a bacterial germ from one host to another. Plague is a disease of rats, and in those animals it usually takes the form of a septicæmia. The flea bites the septicæmic rat and ingests the plague bacilli; these passing into its stomach, then into its intestines, and so eventually are voided with the fæces. As the rat dies its fleas may pass on to the skin of man, and these on defæcating will expel plague bacilli, which either enter by the hair follicles or through the puncture wounds made by the same or other fleas, and so bring about the infection. Most people who go with bare legs and feet get bitten on these parts, and the bubo comes as a result in the groin (bubonic plague).

The pneumonic form of plague has probably nothing to do with the flea. The germs coughed out by the invalid are inhaled by others, and so the disease is propagated. These cases are very dangerous to go near, and intimate contact with such should always be avoided. The bubonic cases are not so important, and, provided the rats about the place are not infected, there should not be further cases.

HOW PLAGUE IS BROUGHT.

Cases of plague come from time to time to the Thames in steamers from India, and some of these have found their way into the hospitals at the docks without anything untoward happening. For plague to get into a place and take hold rats must be present, and rat plague starts first. The pneumonic type I have just alluded to is probably an exception to this. There is the well-known instance which occurred in Vienna, where a laboratory assistant who infected himself in a laboratory was taken into a ward for pneumonia—in reality plague pneumonia—and the nurses and doctors who attended the case all got pneumonic plague and died from it.

We may pass now to a higher group of organisms than these we have been discussing; namely, to the protozoa, the lowest forms of animal life. Up till quite recently we believed that one of these—namely, the trypanosome—was spread directly from animal to animal by means of the proboscis of the tsetse-fly as if by an inoculating-needle,

but now it is probable that a proper development of this parasite has to take place within the stomachs of such insects.

THE AGENCY OF FLIES.

Experimentally, of course, direct transference of such a parasite from rat to rat, say, is very easy; but from what has recently been found out, such a mechanical transference of the trypanosome by the proboscis of the tsetse-fly in Nature is probably of fairly rare occurrence. Two years or so ago Kleine in Africa showed by experiments that the trypanosome develops for a varying period of time in the interior of the fly, and that it is only after later dates that such a fly becomes infective. From quite a short time after biting (a few hours) to this later date the flies remain non-infective, but in interrupted feeding experiments there is still a chance of the transference of the parasite directly; *i. e.*, if a fly is feeding on a heavily infected animal and is disturbed, and immediately settles on and bites another, it might transfer the parasite. In the case of some of the other protozoal parasites, and in the case of others higher in the animal kingdom still, a proper development or metamorphosis has to take place in some of the tissues of the insect, this resulting in the production of forms of the parasite which are transferred to the next host. Some of these life histories are very complicated and not so easy to understand. First I shall call your attention to malaria which is perhaps the best known of these, and then afterwards you will better understand some of the other diseases which I shall describe later.

THE LIFE HISTORY OF THE MALARIAL PARASITE.

There are two phases of the malarial parasite: first, the intra-corporeal or asexual phase in man; second, the extra-corporeal or sexual stage in the mosquito. In the early stages in man's blood the malarial parasites are small protozoal organisms which inhabit the red blood corpuscles; these grow larger, ultimately filling the whole or nearly the whole of the corpuscle; then the black pigment collects in a mass in the centre, the protoplasm breaking up around this into a number of spores. The corpuscle next ruptures, the spores escaping into the plasma, and these in turn penetrate and enter new red blood corpuscles, and so start the cycle again.

When this sporulation, as it is called, is going on, however, we see other bodies which do not behave in a similar manner; these are the gametes or sexual forms, which when sucked out of the blood by suitable mosquitoes will develop and go through the sexual phase.

THE MOSQUITO.

When the mosquito sucks up ordinary malarial blood it will, of course, take up all the forms; but the asexual parasites, rings, half-grown and sporulating shapes, are simply digested and disappear. With the others, however, the gametes, complicated changes now take place. The crescents, the gametes of malignant malaria, become spherical, the gametes of the benign fever being spherical from the first. Some of these bodies are males, others females; and eventually from the former actively moving flagella are given off. These are similar in nature to the spermatozoa of higher animals. A single flagellum penetrates one of the female cells, and sexual union or zygosis is thus accomplished. The resulting body elongates out, and is now known as a travelling vermicle. The function of this body is to penetrate the walls of the mosquito's stomach, which consist of the following four layers: (1) a delicate cuticula, (2) a layer of cubical cells, (3) an elastic lamina, and (4) a muscular coat of circular and longitudinal fibres. Having accomplished this the vermicle comes to rest in the outer part of the stomach wall, where it again becomes circular and is then known as the oocyst. This latter body grows and grows until eventually it protrudes from the stomach of the mosquito like a little wart or hernia. At the same time as this goes on minute changes are taking place within its interior. We get a segmentation of the protoplasm into what are known as blastophores, and later the appearance of spinous bodies on the walls of these; still later the blastophores disappear and the cavity now becomes packed with these small spinous bodies, which are technically known as sporozoites. Now the wall of the cyst ruptures, the sporozoites being set free into the tissues of the mosquito, their ultimate fate being to be collected and stored up in the salivary glands, organs situated in the anterior part of the thorax of the insect. From the salivary glands the salivary duct leads to the proboscis, and when the infected mosquito next bites man sporozoites *plus* the saliva will be injected into the wound. The little organisms soon find their way to the red corpuscles, penetrate their walls and enter into their substance, become circular, and then from these, the young rings, the asexual or intra-corporeal cycle again starts and the chain is complete.

These changes just described take a definite time to accomplish; at a suitable temperature they take ten days or a little longer. After one is bitten by the infected mosquito there is an incubation period of ten to twenty days, and then the fever appears. All mosquitoes will not act as suitable intermediaries for the malarial parasite; only certain

ones of the sub-family of the anophelinæ are suitable. Malaria, then, is an example of a disease where the specific parasite has to undergo a development in an intermediate host, in this case a suitable anopheline. If such a development did not take place the disease would come to an end, because when a person who had malaria died he would not transmit it to anyone else, his parasites dying with him.

Further, if one could cut the chain of the cycle by removing all mosquitoes, *i. e.*, the intermediate hosts, the disease would again come to an end. But this will be better dealt with in a future lecture on the prevention of tropical diseases.

YELLOW FEVER.

I will next speak of a disease the germs of which have again to pass through a mosquito, and which in many ways has a close analogy to malaria—namely, yellow fever. Strangely enough, though we know the disease is spread by mosquitoes, we do not yet know the parasite either in man or the mosquito. What we know of the ætiology of the disease is due to the work of the Americans in Havana, who, working on the analogy that the malady might be similar to malaria, discovered that a special mosquito, the *Stegomyia Calopus*, is the transmitting agent. They fed such mosquitoes on yellow-fever patients, and then allowed these insects to bite susceptible individuals at varying periods of time afterwards, eventually finding that if puncture took place after the thirteenth day the disease was acquired. It had been noticed that people could be put into beds in which yellow-fever cases had died, and where even there was black vomit, and yet they did not get yellow fever; whereas, on the other hand, when placed in specially constructed rooms with infected mosquitoes they invariably got it. To summarise: our knowledge of the part the mosquito plays in yellow fever is as follows. We know that in the blood of yellow-fever cases on the second, third, and even in some instances on the fourth day there is some kind of infective agent circulating in the peripheral blood. Mosquitoes of the genus *Stegomyia* and of the species *Calopus* when they suck up such blood become infected, and after a period of thirteen days or so become infectious. Susceptible individuals bitten by such infected mosquitoes readily acquire the disease, the incubation period being a short one of only two or three days. The life of a *Stegomyia* may be as long as sixty days, and once infected they appear always to remain so; therefore the number of people they may bite and infect in such a time may be very great. Here again, if we can cut the mosquito out, I mean destroy or greatly diminish all the *Stegomyia* in a place, yellow fever must come to an

end; and this, as I shall tell you in my next lecture, has actually been done in Havana and other parts of America where yellow fever used to be rife. You can sit with a yellow-fever case all day, and not run the slightest risk of acquiring the disease, provided no mosquitoes (*Stegomyia Calopus*) are present; and so also, if by means of mosquito nets this mosquito is kept out, there is no danger. The interesting feature of the disease is that the parasite has never been seen. Infected blood passed through a porcelain filter is still said to retain its infectivity; therefore the parasite, whatever it may be, is said to be ultramicroscopical.

DENGUE.

I can give you another example, namely, dengue. It has been shown in the last few years that this troublesome disease is also spread by mosquitoes; namely, by the ordinary brown domestic mosquito, *Culex Fatigans*. No one has demonstrated a parasite in the blood of dengue cases so far; but if the mosquito mentioned sucks the blood of such cases it becomes infected, and in time infectious, giving dengue to susceptible people whom it may bite.

There is yet another disease—namely, horse sickness of South Africa—that is caused by another of these ultramicroscopical parasites, and which is also very likely spread by mosquitoes.

We now pass to another disease, *Filaria*, a very interesting and important tropical ailment, and one caused by a nematode worm, the *Filaria Bancrofti*. The worms, of course, are comparatively high up in the animal kingdom—very much higher, for example, than the lowly protozoa we have been chiefly dealing with so far. Still, though this is so, this individual worm, the *Filaria bancrofti*, has to pass through a metamorphosis in mosquitoes in a somewhat similar manner to parasites just described. The adult forms of *Filaria bancrofti* inhabit the lymphatics of man; they are quite visible to the naked eye, measuring as much as 2 or even 3 inches in length, and resembling fine pieces of catgut or thread; they are bisexual, and the females give birth to microscopic embryos which circulate in the blood, appearing in the peripheral blood by night and disappearing during the day. These embryos are shaped like little snakes or eels, and measure to $\frac{1}{80}$ th of an inch in length (.317 mm.) by 7.5 *a.* in breadth; *e.g.* the breadth of a red blood corpuscle. At night, as I have said, the embryos appear in the peripheral blood; so that if you go into a hospital in the tropics, and bleed the natives between 10 P. M. and midnight, you will find in a certain number of them these embryo *filariæ*. During the day they disappear, going into

the heart, the lungs, and large vessels of the thorax, where they remain till evening comes round again. How they do this is quite unknown.

THE FILARIA.

All insects that bite a filariated individual must necessarily suck up the embryos into its stomach; but in the majority of instances—fleas, bugs, lice, etc.—they (the embryos) are digested and eventually disappear. If, on the other hand, *Culex fatigans* or some of the anophelines come along quite a different thing happens. The embryos erupt from their sheaths, penetrate the wall of the stomach, bore their way into the thoracic muscles, and there come to rest. After this they soon begin to grow, and eventually form comparatively large objects, one-sixteenth of an inch in length, just visible to the naked eye. Arrived at this stage they burst out of the muscles, pass forward into the head of the insect below the cephalic ganglion, and so to the base of the labium, which they enter.

The labium is the fleshy part of the proboscis, which does not penetrate the skin when the mosquito bites; but the worms, when biting is going on, come out between this structure and the labellæ, and so wriggle into the wound made by the stylets, the other part of the proboscis. Once under the skin, passage to the lymphatics is easy; and then further growth and differentiation into males and females takes place with the birth of embryos, which again in turn appear in the peripheral blood in due course, and so complete the cycle. Here again, if you break the chain by destroying the mosquito or intermediate host, the disease must come to an end.

TICK, FEVER, RELAPSING FEVER.

Let us now conclude by a word or two on the spirochætes and the pyrosomata, other parasites spread by insects, in both cases by ticks. You all know the spirochætes. They used to be called spirilla; and syphilis, you will remember, is due to one, the *Treponema pallida*. Two of these, the spirochæte of relapsing fever and the spirochæte of African tick fever, merit attention.

It was discovered in South America that fowls may harbour a spirochæte; and it was also shown that this parasite is carried by a tick, passed on to its ova, and from the latter to the next generation of ticks. This was a very important discovery, and it became fairly obvious that the tick fever of Africa might also be due to a spirochæte. This was looked for and was ultimately found. The tick that spreads this is the *Ornithoderus moubata*, a bug-like creature which inhabits the cracks

and corners of mud huts and houses. It sucks the blood of infected cases, and just as in the case of the fowl tick (*Argas persicus*), the spirochætes pass to the ova, and so into the young brood of ticks, which therefore in turn become infected, and so can transmit the disease. If one makes a habit of sleeping in native huts in Central Africa, sooner or later some of these infected ticks will bite you and so give this disease.

RELAPSING FEVER.

Now what about the ordinary relapsing fever of Europe? This is not spread by ticks, but there is much evidence to show that it is spread by lice. The last case of relapsing fever I saw was a case which had originated in a boarding-house at Greenwich.

The man was a sailor, and in the boarding-house in question there had been a case of relapsing fever from abroad. No doubt lice were present in abundance, and, getting the infection from the imported case, soon transmitted it to the healthy individual. At present we are not certain whether spirochætes are bacteria or protozoa; but they are certainly a class of organism by themselves, and the spread of some by insects is of immense interest.

CATTLE DISEASES.

As regards the pyrosomata, parasites akin to malaria, but so far never found in man, only in animals, much could be said. They are parasites which cause an enormous mortality in cattle, horses, and other animals in different parts of the world—for example, the *Pyrosoma bigeminum*, the parasite of red-water fever of cattle; the *Pyrosoma parvum*, the cause of East Coast fever in Africa; and the *Pyrosoma canis*, the cause of malignant jaundice in dogs. Before the discovery of the development of malaria in the mosquito, SMITH and KILBORNE in America had worked out the life-history of the *Pyrosoma bigeminum* completely; and there is no doubt that their discovery led the way to the subsequent one of malaria and the mosquito.

These observers found the parasite, the *Pyrosoma*, in the blood of the infected animals, and showed that ticks which sucked the blood of such animals became infected, the infection passing through the ova to the larvæ and nymphs, and so back to fresh animals. Susceptible cattle taken into an area where this disease exists will soon be bitten by the infected young ticks, and so get the disease and die. The loss to stock-owners and others by this disease alone is enormous, and its presence in countries may often spell financial ruin.

These instances, then, will help you to appreciate what an enormous part is played by insects in the carrying and transmission of some o

the most important scourges of the tropics. One point, however, that may be said in favour of insect-borne diseases is that they can be much more easily stamped out than those which are spread in other ways. The cutting of the chain, by removing the insect, is alone sufficient to make the disease disappear.—*The Hospital*.

SURGERY.

Treatment of Gonorrhœal Epididymitis by Aspiratory Puncture.

ERNST.—This is a useful modification of the treatment of epididymitis by puncture with a bistoury and has been practised by the writer in 52 cases with satisfactory results. The needle of a sterile hypodermic syringe, which should be very sharp, is thrust rapidly through the stretched skin of the scrotum into the tail of the epididymis to a depth of 1 or 2 cm. A slight crepitation is felt, the piston of the syringe is drawn out so as to cause slight aspiration, and the needle is withdrawn. The operation only occupies a few seconds and requires no anæsthetic, as it is practically painless, a little practice enabling the operator to fix the epididymis without causing pain.

In the majority of cases a single puncture suffices to diminish the swelling and tenderness of the epididymis. Of the 52 cases only 8 required a second and 3 a third operation. When, as is usual, there is no fluctuation, the puncture should be made in the tail of the epididymis. A few drops of serous fluid, sometimes turbid or blood-stained, are withdrawn, which on microscopic examination shows pus cells in more or less abundance, but the gonococcus was only detected in 5 cases. When hydrocele is present, as occurred in 7 cases, it should be evacuated before puncturing as it interferes with palpation of the organ. After puncture the patient should be kept in bed with the scrotum raised and covered with moist warm compresses. The beneficial effect of the operation is shown by the almost immediate disappearance of spontaneous pain, though in a few cases the pain returns in 12 or 24 hours and may require a second or, more rarely, a third puncture. The tenderness on pressure also rapidly diminishes so that after 5 or 6 days palpation or slight compression of the parts is practically painless. The temperature falls often in a few hours generally by the following morning and more rarely by lysis. Marked reduction of swelling is usually observed within 24 hours. No bad results of the operation were observed except the production of a slight hæmatoma, which was rapidly absorbed. Rest in bed with fomentations to the scrotum is advisable

even when the swelling continues to diminish, but when the urethral discharge is slight and only contains few gonococci the patient may be permitted to rise and walk about for a few hours daily, wearing a suspensory bandage. The method of aspiratory puncture is safe and simple, gives rapid relief from pain and considerably shortens the duration of the affection. It should form the best method for the hospital treatment of gonorrhœal epididymitis.—*The Medical Review*.

A New Antiseptic Dressing.

BURROUGHS WELLCOME & CO., London.—**Tabloid Brand Bismuth Gauze** is a new dressing which will be particularly acceptable to the gynæcologist, and also in surgical cases generally. This preparation is non-toxic and has no smell. Its properties are equivalent in other respects to those of iodoform gauze. Placed as an absorbent dressing in the uterine cavity Bismuth Gauze has remained odourless for five days, whereas iodoform gauze under similar circumstances became foul in forty-eight hours.

Bismuth Gauze would appear, therefore, to be specially suitable for use in cases of incomplete abortion; in curretting, plastic operations on the cervix and vagina, and for many other purposes where a powerful non-irritating antiseptic is required. It is made in widths of one, two and three inches, and is carefully sterilised and packed in one-yard rolls each surrounded by a specially varnished germ-proof cover.—*The Bristol Medico-Chirurgical Journal*.

Important Contributions in the Advancement of Anesthesia.

BY

W. E. LEIGHTON, M. D. ST. LOUIS, MO.

The advancement of the subject of anesthesia has been rapid within the past few years. Not only has progress been made in the experiments regarding the action of anesthetics on the tissues, but many new methods and appliances have been devised to facilitate and render safe anesthesia.

In 1901 OVERTON (1) of Jena, established the fact that the action of anesthetics, such as ether, was upon the lipoids of the cells.

MEYER (2) in 1906, working independently, came to the same conclusion. He states: "As a result of these studies we arrive at the following explanation of narcosis: the narcotizing substance enters into a

loose physico-chemical combination with the vitally important lipoids of the cells, perhaps with lecithin, and in so doing changes their normal relationship to the other cell constituents through which an inhibition of the entire cell chemism results. It also becomes evident that narcosis immediately disappears as soon as the loose, reversible combination, dependent on the solution tension, breaks up. The establishment of the fact that the effect on the lipoids by narcotics, such as ether and chloroform, is such as to immediately inhibit the vital processes of the cell shows us that these lipoids are among the constituents essential to the life of the body." This theory becomes the most plausible one to account for the action of anesthetics.

If it is true that anesthetics attack the lipoids, the question arises, is it not possible to restore the cells to a normal condition by the injection into the system of some substance capable of breaking up this chemical action? The answer seems probable from the experiments of Graham (3), who worked on the problem of "the effect of ether on the phenomena of bacteriolysis, agglutination and phagocytosis." He found that ether reduced the phagocytic power of the blood, the reduction lasting from two days to several weeks.

Working on the hypothesis of OVERTON and MEYER, he conducted experiments to determine whether or not the fat-solvent power of ether is the property by means of which it is capable of inhibiting phagocytosis. Without going into the details of these experiments, "he found that when lecithin was added in small amounts to the blood which had been subjected to the action of ether, a prompt restoration of phagocytosis occurred."

Similar experiments were performed with olive oil, and it was observed that the injection of suitable amounts of the oil into the rectum was followed after three to six hours by a restoration of phagocytic power, while on the contrary, the injection of the same amount of physiologic salt solution had no appreciable effect in shortening the period of phagocytic depression.

Another factor established by OVERTON was the fact that the effect of anesthetics on the cells was directly proportional to the amount of the anesthetic employed.

This fact needs especial emphasis and any means adopted to lessen the amount of ether or chloroform employed should be carefully considered.

In this line the recent work of Gatch (4) of Baltimore is a timely one. He experimented with the effects of a rebreathing of the expired

air when using nitrous oxid and oxygen; the rebreathing feature being based on the work of Haldane and Smith (5) on carbon dioxid, and the classic experiments of YANDELL HANDERSON (6) on shock.

The rebreathing feature, so carefully studied and found so advantageous with nitrous oxid gas and oxygen is practically true with ether, as the author has been able to determine with the use of the BENNETT gas ether apparatus.

In the method of administration many new devices have been invented and in this respect it has kept pace with surgical science. The recent advance in thoracic surgery has necessitated a change in the administration of the anesthesia both in positive and negative pressure cabinets, and while these changes have been more or less physical problems, it remained for MELTZER and AUER (7) to show a simple but new mode of maintaining anesthesia and preventing pulmonary collapse, which would seem to obviate the more complicated and expensive cabinets.

This method known as intratracheal insufflation consists of passing a tube of sufficient size, so as partially to fill the trachea through the mouth, into the trachea as far as the division of the bronchi. The lungs are prevented from collapsing by means of a bellows which pumps air and ether into the lungs under a pressure of 15-25 mm. of mercury.

The residual air, or what would correspond to expiration, escapes by the side of the tube within the trachea. This apparatus has proven very satisfactory in animal experiments and has been tried with success in man (8).

This method at first glance would appear to be similar to the method of KATZENSTEIN (9) of Berlin, who administered ether through a Trendelenburg tracheotomy cannula, at the same time keeping the lungs expanded by means of a bellows attached to a T tube. A valve in the tube allowed the expirations to escape at the will of the anesthetist.

The method of MELTZER and AUER, however, allows perfect oxygenation of the blood, but absolutely without motion of chest or lung, a decided advantage in thoracic operations.—*The Interstate Medical Journal*.

The Anæsthetist's Outfit.

THE following list is that of articles which should invariably be at hand or be taken to every case: Stethoscope; anesthetics and apparatus for administration; mouth props; mouth wedge; gags; sponges; sponge holders; tongue forceps; needle and silkworm gut; tracheotomy

instruments; hypodermic syringe and drugs. The following may be added with advantage, especially if at all likely to be wanted: cylinder of oxygen with tubing, etc.; instruments and tabloids for saline infusion.

Stethoscope.—It is perfectly true that more may often be learnt as regards the patient's fitness for an anæsthetic by observing the breathing, colour, and pulse than by listening at the chest. Valvular disease producing loud bruits may have no obvious result, provided there is good compensation and the anæsthetisation skilfully conducted. On the other hand, dangerous forms of cardiac degeneration may not be revealed by the most careful auscultation. Still, the stethoscope should always be used, even when the above reservations are borne in mind, and even when it seems obviously unnecessary. Its use may reveal something unsuspected, and gives confidence to the patient and friends, whilst if it be omitted and ill effects occur from any reason whatever the anæsthetist may be severely blamed.

Apparatus.—Care should be taken to see this is in good working order and thoroughly clean, and that there is a sufficient quantity of anæsthetic. The anæsthetist should always be prepared with one or more alternatives, which will depend upon the age of the patient, the nature of the operation, and other circumstances.

Mouth Props.—For extraction of teeth these are usually supplied and inserted by the operator, but it is well to use one (if a gag be not inserted before beginning) in the case of mouth-breathers, and when the teeth are so complete that difficulty may arise in opening the mouth, either for operation or to relieve obstructed breathing. For such purposes a small wooden prop in the shape of a bobbin or double wedge should be inserted horizontally, so that the bicuspid close on the constricted part—then if the mouth be slightly opened or the lower jaw has to be pushed forward it will not fall out.

Mouth Wedge.—This, in its simplest and perhaps its best form, is merely a stout boxwood handle tapering to a wedge, by which the molars can be separated for easier insertion of a gag. It should not be used (as the writer has seen done) for levering the lower jaw forwards to improve the breathing—the jaw should be pushed forwards by a thumb or finger at its angles.

Gags.—Some form of Mason's gag is required, one with short handles being more generally useful. For removal of tonsils, etc., two gags, for use on alternate sides, will facilitate quick operating if a Doyen's be not preferred. A screw gag for forcible and rapid opening may be needed in emergencies.

Coarse sponges entangle clots and mucus better than fine ones. Care must be taken that there are no tags which may come off.

Sponge Holders with sharp teeth and rings are untrustworthy. The former are apt to tear away from the sponges and the latter to become displaced by the edges of the teeth. Long-handled serrated forceps are preferable.

Tongue Forceps.—The usual pattern with broad rings is recommended. When clamped there should be space between them to hold the tongue without crushing it. These, however, should only be used for drawing out the tongue or holding it out momentarily—not for keeping it forward for any length of time, which is best done by a piece of gut passed through it a quarter of an inch from the tip—this can be looped over the anæsthetist's finger or held by an assistant. Most of the forceps which pierce the tongue bruise it as well. Much distress may result from damage to the tongue, causing continued pain and interfering with talking and taking nourishment.

Tracheotomy Instruments may never be required during a lifetime, but, on the other hand, they may be badly wanted.

The *Hypodermic Syringe* must be overhauled occasionally if not in constant use, or it probably will be found out of order when required.

Drugs, such as atropin, morphine, pituitary extract, will of course vary somewhat, according to the practice of the anæsthetist.

Oxygen and materials for saline infusion should always be provided in any case where there is possibility of shock, whether from initial exhaustion, prolongation of the operation, hæmorrhage, or any other reason. The former is needed when respiratory failure may occur, as in operations on the brain.—*The Hospital.*

OBSTETRICS AND GYNÆCOLOGY.

A Curious Case of Anasarca Early in Pregnancy.*

By

HARIDHAN DUTTA, L.M.S.

Mrs. G.—Hindu lady, aged about 17, belonging to a rich family in Calcutta, had been in sound health up till March last. She had been regular in her menstruation since she first had it and never suffered from any complaint with her generative organs. No previous conception. In the middle of March her expected menses did not appear and remained

* Read at the Calcutta Medical Club.

stopped since then. Very soon after, she was found to be "fattening" as the relatives supposed. No anxiety was, however, felt about her till a month and a half passed when she was found to be distinctly suffering from swelling almost all over her body and medical help was sought. He also began to complain of pain and tenderness on different parts of her body and the swelling was more marked in her lower extremities than elsewhere. Very soon after, she began to suffer from symptoms of indigestion, nausea, vomiting and so forth, attended with rather severe pain in different parts of her body. The swelling went on increasing all over the body and the patient became miserable. The urine was examined by Dr. S. B. Ghosh on 25th May and the result was as follows:—

Reaction	..	..	Alkaline.
S. G.	..	..	1009
Sugar	..	..	Nil.
Albumen	..	..	Nil.
Renal Casts	..	..	Nil.

She had no rise of temperature, no diarrhoea, no palpitation of the heart. Pregnancy was suspected, although medicines were being administered, no drastic treatment was resorted to.

In the middle of June, the gastric symptoms almost disappeared and several small patches were found on her legs and other parts of her body, still there was no fever, no diarrhoea. The swelling continued. The enlarged uterus could be felt on pressure from outside, though not without some difficulty. My friend Dr. Brahmachari also saw the case at this time and he had suspicion of Beri-beri in his mind and we actually gave her Cal. Lact. for some time with scarcely any amelioration of symptoms. The diet was salt-free and mainly consisted of milk. At the end of June, the swelling increased alarmingly along with pain here and there. Diuretics were given to her and Rubinet water was freely used to relieve her bowels. These gave some relief to the patient. The urine was again examined on 29th June by Dr. Ghosh and the result was as follows:—

Reaction	..	..	Alkaline.
S. G.	..	..	1007
Sugar	..	..	Nil.
Albumen	..	..	Trace only.
Renal Casts	..	..	Nil.

At this stage Col. Brown was consulted and as there was a history of S. S. in the husband, Liq. Hydrarg. Perch. was given to the

patient. A few days later, the patient began to have slight rise of temp. in the evening and besides other symptoms she felt distress over her heart. The heart sounds were, however, not abnormal except that there was slight accentuation of the 2nd sound. The enlarged uterus was now quite distinctly palpable. Dr. N. R. Sircar was now consulted and we, failing to account for the cause of general anasarca, wanted to have the blood examined but unfortunately this was not done. The swelling went on increasing still more and serious symptoms of headache, vomiting, anorexia, sleeplessness, &c., began to appear and everybody got alarmed about the result.

At this stage, a lady doctor was called in to examine her. She, however, expressed her doubt about pregnancy and advised continuance of the treatment the patient was then having. However, all doubts about pregnancy were cleared when that very evening, the patient had pains attended with bleeding and the next morning she gave birth to a child of about 5 months' age. I attended her during the miscarriage, and had to use Ergot to stop excessive bleeding. After the miscarriage the swelling began to decrease quite perceptibly. On the 3rd day after the miscarriage, she had a rise of temperature which was checked with Quinine. After this, the patient has not been given much medicine but has been steadily improving and very lately I have found her free from swelling. Indeed, she has almost regained her former health.

I consider this to be a curious case where pregnancy was from the very commencement associated with anasarca. The co-existence of the two and disappearance of the swelling without any treatment after the pregnancy ceased, leads me to presume that the anasarca was due to pregnancy. I, along with my friends who saw this case, failed to make out any other cause to account for the anasarca. But the curious point is how can pregnancy cause anasarca at its early stage. This is a point which is very difficult to explain. I leave the report of the case for the consideration of my hearers in this meeting and I hope some elucidation of the cause of the anasarca in this case will follow.—*The C. M. Journal.*

DERMATOLOGY.

On the Use of Plasters in Dermatology.

The use of plasters has been well established in the practice of medicine since the earliest times, but, curiously enough, almost invariably in the treatment of internal complaints. The emplastrum belladonnæ, for example, has long been a favourite application for the relief

of pain in cases of pleurisy and in affections of the joints. In the light of recent research it is doubtful to what extent the benefit which patients ascribe to its use is due to the absorption of belladonna through the unbroken surface of the skin and to what extent the psychical effect of the knowledge that the plaster is sticking firmly to their bodies acts as the true therapeutic influence. In any case good results frequently follow its application. Again mercury has often been administered through the medium of plasters for the treatment of syphilis, especially in France where the custom was first introduced by the celebrated John of Vigo in the latter half of the fifteenth century. This was a plaster of very abstruse composition, and contained, in addition to mercury, gold, the fat of vipers, and the juice of "quick-frogs." In modern preparations these ingredients are omitted. This method of administering mercury is dirty and uncertain, and has now been for the most part abandoned.

The use of plasters, on the other hand, for the treatment of affections of the skin itself has only become prominent in modern times, and the popularisation of this method is largely associated with the name of the distinguished German dermatologist, Professor Unna. He employs plasters which are of two kinds, adhesive and non-adhesive. When non-adhesive plasters are used adhesive plaster is employed also to keep them in position. The old-fashioned lead plaster, which only becomes adhesive after being moistened with turpentine or heated before the fire, is quite unsuitable for application to the skin, for it almost invariably causes a dermatitis. The adhesive plasters which can be used safely are all made up with a solution of india-rubber with which is incorporated a quantity of zinc oxide; such a plaster may be left safely in position for a week or more. A preparation such as this is very useful in any case where it is desirable to obtain protection against external influences such as the friction of the clothes or against scratching. Patches of chronic dermatitis which often are left in the flexures of the limbs after an extensive eczematous eruption has died away from other situations, often do well when protected in this way, and the patients often make the observation that as soon as the plaster is placed in position the itching which they have found so distressing disappears. Many patients with sensitive skin who are liable to small patches of parakeratosis, particularly where the surface is subject to a little additional friction—for example, where the buckle of the sock-suspender rubs slightly, or after carrying a gun upon the shoulder—find that these patches disappear in a surprisingly short time if the place affected be protected with a piece of zinc oxide plaster of suitable size. It is also very useful in cases of small patches of lichen planus, in which the irritation is oft-

times intense. These small lesions if protected by plaster cease to itch at once. As they do not itch they are not scratched, and as it is the scratching which is the chief cause of their persistence and spread they speedily vanish away. In a generalised eruption of lichen planus it is, of course, impossible to cover all the papules with a coating of plaster, but in these cases it often happens that there is more irritation in one situation than another and the protection of one or even several small areas will frequently give great relief. Another condition in which zinc oxide plaster is distinctly useful is when the skin has been grazed so that the epidermis has been rubbed off and thus the papillæ laid bare—the sort of wound which is produced by knocking the hand against a hard and rough surface. It will be found that these annoying little lesions heal over much more quickly when protected by a coating of zinc plaster than under any other conditions.

Other varieties of plaster are also made up containing many different drugs—for example, mercury, salicylic acid, and resorcin are frequent constituents. Mercurial plasters, although unsuitable as a medium for the internal administration of mercury, are useful for promoting the absorption of syphilitic deposits when locally applied, and may be more particularly recommended when the hands or face are affected and the lesions are unpleasantly conspicuous. They are also useful for application to boils and furuncles on the back of the neck or on the limbs. Salicylic acid is a very useful drug when made up in the form of a plaster, owing to its power of reducing or softening hard and horny structures. Sometimes it is used for ordinary warts, but as a rule there are more convenient methods of dealing with these troublesome disfigurements. On the other hand, salicylic plasters containing about 25 per cent. of the acid form perhaps the best application for the multiple papillomata which not uncommonly occur upon the heel and sole of the foot, and which usually, on account of their exquisite tenderness, make walking an extremely painful process. Under the influence of a salicylic plaster these soften, and if they do not actually fall out can easily be removed with a corn-knife. Nor do they often recur. A plaster is also a convenient way of applying salicylic acid in cases where hyperkeratosis complicates either eczematous or syphilitic lesions of the palms or soles. Reduction of the very conspicuous horny covering which so often is present is a most necessary condition of the successful treatment of these conditions. Another type of case wherein the same sort of plaster can be recommended is lupus vulgaris. The application of a strong preparation of salicylic acid causes the nodules to soften and ulcerate, and if the application be repeated sufficiently often it may indeed alone effect

a cure—but the process is slow. A speedier method is to apply the plaster until the patch is quite sore, and it will always be found that the lupus nodules are more affected than the healthy portions of the skin, and then to submit the whole to X-rays. Good results can often be obtained by this combination of therapeutic agents, both from a radical and a cosmetic standpoint, and the time required is a mere fraction of that occupied by a course of Finsen light treatment.

This treatment is therefore particularly to be recommended in old-standing and extensive cases. An excellent and permanent scar can be obtained if the case be well managed.—*The Hospital*.

Cases and Comments.

Plague and Pregnancy.

BY

M. GURU RAU.

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With the exception of the confluent form of small-pox, which is so rare in these days of vaccination, very few diseases are directly dangerous to a pregnant female. In other words, a pregnant female is subject to the same diseases and their influences on her are more or less the same as in the non-pregnant state. But the influences of certain diseases on the foetus are always very grave. For instance—

- (1) A mild attack of small-pox;
- (2) Continued fevers, if severe, with a temperature of 104° F. or upwards, in the mother;
- (3) Pneumonia;
- (4) Albuminuria;
- (5) Extreme anæmia;

generally (with rare exceptions) tend to produce abortion or premature delivery. This is due to the fact that the blood of the mother in these conditions is impoverished or loaded with deleterious products and consequently the foetus ill-nourished or poisoned.

In the same manner, the condition of a parturient female who suffers from a severe attack of zymotic diseases, becomes more grave owing to the fact that she has to withstand not only all the effects natural to her condition, but also the ill-effects of deleterious products circulating in her blood. The consequences are of course disastrous.

Plague is one of such diseases. However mild the attack may be, it has a disastrous effect on a pregnant female. It invariably brings on

abortion or premature delivery and kills the mother. I have not been able to collect sufficient statistics to put forward in support of this fact; but I have noticed such a result in 3 cases within the past 3 epidemics in these parts. Two of these cases were not under my direct care, though I know both of them died of plague. They both advanced about six months in pregnancy, had fever and slight delirium. One of them complained of pain in the groin. They both aborted and died after an illness of 3 or 4 days. The third case which occurred recently was under my care from the commencement of the disease till the death of the patient. The case was at first taken to be one of ordinary fever but diagnosed as plague when it was too late. The following is a short account of the case:—

A Hindu lady, aged about 20 years, advanced about 7½ months in pregnancy, lived in an isolated bungalow. Two suspicious cases of plague occurred in the neighbourhood. During the previous epidemic, that is 2 years ago, a boy of a different family that lived in this bungalow had died of plague. The lady under reference enjoyed good health, though she had suffered from malarial fever on one or two occasions before. On the 26th November 1910 she got a fit of shivering followed by fever, severe head-ache and general pains over the whole body. I saw her during the same night, and taking the complaint to be merely a relapse of malarial fever, prescribed a few doses of diaphoretic mixture with some potassium bromide in it.

The temperature on the following morning was 102° and the symptoms continued the same. Her tongue was thickly coated with a white fur, and the breathing was hurried, about 30 per minute. On physical examination, the lung did not reveal any symptoms of disease. The hurried breathing was therefore attributed partly to fever and partly to pressure effects of gravid uterus natural to pregnant women in the latter months of pregnancy.

The bowels were cleared out by a few doses of saline mixture, and a diaphoretic mixture consisting of Liq. Ammon. Acet., Pot. Cit. and Camphor water was ordered to be given every 4 hours.

The temperature remained the same on the 27th and the 28th. She said she did not feel anything unusual in her abdomen. On the 29th morning she is said to have complained of slight pain in the front part of her abdomen.

At 12 noon I received an urgent call to send female help. I ran up with all possible help and found the woman delivering. I conducted the delivery myself. The uterus was carefully followed, the placenta

was expressed out and the uterus supported for half an hour. 5 grs. of Quinine Sulphate and 1 drachm of Ext. Ergot. Liq. in an oz. of water was administered, and a binder put on. In spite of all this there was slight hæmorrhage which at any rate was more than what it would be in a healthy woman. This must have been due to the relaxed condition of the uterus consequent on fever.

Though the uterus had firmly contracted and the hæmorrhage had entirely stopped, yet the condition of the patient after delivery became worse and she began to sink. She, however, came round after the administration of stimulants. In the night the temperature was 99° F. She complained of sleeplessness. 10 minims of Tinct. Opii in an oz. of warm water was ordered, but it had not the desired effect.

On the following morning the temperature was about normal, and 5 grains of Quinine with half a drachm of Ext. Ergot Liq. in an oz. of water was administered. The hurried breathing which remained almost the same throughout grew worse every moment and she began to sink rapidly. In spite of 2 strychnine injections, hot water bottles to the feet, and the administration of hot drinks, she died about 20 hours after delivery.

The foetus was not well developed; it dragged its life and died about the same time.

The case was put down for plague for the following reasons:—

(1) For the fact that some bad smell was perceived in the bungalow about 10 or 15 days prior to this mishap.

(2) That a plague case had occurred in the same bungalow during the last epidemic. From experience it has been found that cases do occur in the same house in every epidemic without any perceptible cause whatever.

(3) That the hurried breathing and the fact that the temperature was not affected to any degree by the diaphoretics.

(4) From the severity of the symptoms in proportion to the temperature.

(5) From the rapid sinking of the patient.

Unfortunately, in the absence of a microscope, the diagnosis could not be confirmed by an examination of the blood. Unconsciousness, delirium, presence of a bubo and such symptoms need not necessarily be present in all cases of plague. Oftentimes a differential diagnosis has to be made.

(a) The disastrous effect of plague on a pregnant woman, however mild the attack may be, giving no channels for recovery; (b) the fact that, in this respect, it surpasses all the other diseases disastrous to a pregnant woman, and (c) the imperative necessity of inducing all pregnant women to get themselves inoculated, are all that I wish, in this article to bring to the notice of the profession.

THE ANTISEPTIC.

JANUARY 1911.

A Madras Memorial to the Late Emperor Edward VII.



THE lamented death of our late King-Emperor Edward VII has called forth manifestations of genuine grief and spontaneous loyalty all over the British Empire. And the desire on the part of loyal citizens to perpetuate the memory of so good and sympathetic a ruler in some appreciable manner is fairly universal. Movements have been set on foot in almost all parts of the British Empire to establish memorials to the late King-Emperor, and British India is not behind the other parts of the Empire in this respect. Besides the All-India Memorial to the late King-Emperor which is to take the form of a Statue, other local memorials in the different parts of India are also being organised. In this Presidency the Memorial Committee have wisely resolved that the local memorial should take the form of an institution or institutions dedicated to the relief of human sufferings. Nothing will more appropriately commemorate the memory of a sovereign who did so much for public hospitals, sanatoria for consumptives, and for the stimulation of cancer research, as a Hospital and Sanatorium for the treatment of Consumptives in this Presidency. At present, as far as we know, there are very few special facilities for the treatment of consumptives in Southern India. There is a general impression that Tuberculosis is not so prevalent in India as it is in England, and therefore the treatment of that wide class of diseases comprised under the general term 'tubercular diseases' needs no particular attention at the hands of the Government or the public. It is true that tubercular disease is less prevalent in India than it is in England. But there are localities in India where tuberculosis is exceedingly prevalent and where Medical men feel helpless to combat the ravages of this relentless disease without special facilities which have been proved to be of value in other countries. The two great consumptive zones in India are the whole of the West Coast from Karachi to Cape Comorin and the whole of the Gangetic Valley in the North. There are other

smaller consumptive areas, but for all practical purposes we may take the West Coast and the Gangetic Valley as the two great consumptive areas in India. Of these two, part of the West Coast is included in our Madras Presidency and a large number of consumptives from the West Coast find their way annually to the Presidency capital for the purpose of receiving medical treatment. And as we have already said, nothing has been done to afford special facilities for the treatment of these many consumptives who resort to Madras for medical help. The ordinary layman who is not familiar with the progress of Medical Science might suggest that certain special wards set apart for the treatment of consumptives in the Madras General Hospital would meet the requirements of the case. But Queen Anne is dead, and the days of dosing consumptive patients with Cod Liver Oil and Creasote and leaving them in any and every variety of climate are over. At the present day medical opinion is practically unanimous that in many cases the benefit resulting from change of climate far exceeds that to be obtained in any other way. For some years past the treatment of consumptives known as the "open air treatment" which was first systematised and carried out by the late Dr. Brehmer at Gomersdorf, in Silesia, has come into general use and has been carried on in well-conducted Sanatoria in many civilized countries. A good sanatorium for the treatment of consumptives in the Presidency is therefore to be provided first. As to the location of such a sanatorium there are several favourable climates in different parts of the Presidency. We consider that Bellary, Coimbatore, Waltair and Palamcotta are all suitable places for the location of a Sanatorium. But by its proximity to the consumptive zone, Coimbatore has greater claims than the other three places we have mentioned. The establishment of a sanatorium at Coimbatore does not by any means end our difficulties. There are many tubercular cases which cannot be sent to the Coimbatore sanatorium but which have to be kept under active hospital treatment under expert medical men such as are only found in a Presidency capital in India. It is not possible to exactly define the class of cases which are to be so kept in Hospital. Each case must be judged on its own merits. But speaking generally we are of opinion that patients with caseous tuberculosis of the broncho-pneumonic type, in which continuous pyrexia is associated with extensive caseation or rapid breaking down of lung should be retained here under active treatment. So also should cases of the chronic type in which acute miliary infiltration of the lung is in progress. Cases complicated with acute bronchitis or pleurisy ought also to be under hospital treatment, while cases of laryngeal tuberculosis associated with advanced

pulmonary lesions, and those in which extensive ulceration of the intestine is present ought never to be sent away from the observation and treatment of the expert physicians and surgeons associated with the big Presidency Hospitals in the capital city. There is thus a very large class of tubercular patients who cannot be so easily transferred to the Coimbatore sanatorium. What are we to do with them? To keep them in the Madras General Hospital is out of the question. Our experience of Madras tells us that the climate of Madras is absolutely unsuited for consumptives. Patients with the disease far advanced rapidly get worse in Madras in spite of all treatment. And unfortunately they have to come here to get expert medical treatment. Our experience has been mainly with cases of laryngeal tuberculosis together with pulmonary affections. We have found, from practical experience with such cases during the last fifteen years, that they do much better when they are made to reside a little distance outside the city of Madras. There is a tract of country outside Madras between Pallavaram and Chingleput which although it is not very far from Madras is remarkably dry and favourable to consumptive patients. We often advise our tubercular patients to reside at Pallavaram which is at a convenient distance from Madras for the patient to come and see us here or for the doctor to motor down and see the patient at his residence. And with our patients located at Pallavaram we have had very satisfactory results. Other medical men in Madras, we are sure, will be able to say the same. We are therefore of opinion that a good Hospital for Consumptives ought to be established at or near Pallavaram. That Hospital while being under the charge of a medical man at Pallavaram ought to have a number of Madras medical men as consultants attached to it who will frequently visit the hospital and give the necessary advice or undertake any operative procedure which may be required of them. With a hospital like that at Pallavaram and with a sanatorium at Coimbatore, we ought to be able to make a good beginning in our fight against consumption in this Presidency. With only a sanatorium at Coimbatore, the treatment of the class of cases which we have described as suitable for hospital treatment will still be unsatisfactory. The Coimbatore Sanatorium without the Pallavaram Hospital will be unsatisfactory scientifically and will be incomplete as a memorial. We appeal to all loyal subjects who wish to see a suitable memorial to the late King-Emperor raised in this Presidency to see that it is not an incomplete memorial but one that is worthy of the great and good Sovereign whose name it will bear.

BOOK REVIEWS.

"*Non-Surgical Treatment of Duodenal Ulcer.*"—By GEORGE HERSCHELL, M.D., (LOND.) Henry J. Glaisher, London. Price 1/- nett.—This little volume deals in an interesting manner with the etiology and treatment of duodenal ulceration. An attempt is made to supply the blood serum in the body with Anti-lytic and Anti-tryptic substances which are supposed to be deficient in cases of ulcer. The author's experience justifies his line of treatment; and it would be a boon if even the small (5-10 p. c.) mortality in operations of gastro-jejunostomy could be reduced by the treatment. Although in long standing chronic cases the operation gives good results where adhesions exist, the authors' suggestions are worth a trial.

A Treatise on Treatment.—By JOGENDER LALL CHANDRA, L. M. & S. (Calcutta University). With charts and illustrations. Calcutta: 5, Gopee Krishna Paul's Lane, 1911.—This book of about 680 pages is designed for the use of the busy general practitioner and students of Medicine. The symptoms of diseases are very well analysed and most important signs are given. The treatment is very excellent throughout and up to date. The author has given a number of prescriptions which he has found useful in the course of his practice. Some of the menus of diet are very excellent and practical especially for Indian patients. The chart on syphilis is instructive. We strongly recommend this *Treatise on Treatment* to busy general practitioners and senior Medical students.

Manual of Clinical Pathology"—By RICHARD WEISS, M.A., PH. D., F. C. S., (Price 2/- nett.) J. & A. Churchill.—The author, in collaboration with others, has laid before us a very handy little manual containing the most up-to-date methods of clinical investigation. Wassermann's and Cammidge's and Tuberculin reactions are brought within the scope of the daily practice of the general practitioner, without having to go in for any elaborate laboratory appliances. All unnecessary reactions and tests of doubtful value are avoided; and the "clinical indications" of most of the observations are of special value. It gives us, in a nut-shell, the key to the diagnosis of many of the chief pathological conditions in the body. We heartily recommend this manual to every practitioner who desires to benefit himself by the latest discoveries in rational scientific Medicine.



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Original Articles.

* THE DIAGNOSIS OF RECTAL DISEASES.

BY

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[Continued from p. 9, *The Antiseptic*, January 1911.]

PART 2.—THE EXAMINATION OF THE RECTUM.



HE examination of the rectum should be carried out in a systematic manner. It is quite insufficient to insert the index finger to its highest limit into the rectum under the bed-clothes. Such an examination may reveal the grosser lesions, but many of the slighter forms may be missed. There are also many conditions readily appreciable to the eye, but not to the finger. The semi-prone position is the one best suited for the examination of most cases. The patient lies on one side with the face and chest well turned towards the bed, the lower arm being placed behind the back; the knees are flexed and drawn up towards the abdomen, the uppermost being drawn highest up. The buttocks are brought over the edge of the couch. In men, the genu-pectoral, or knee-elbow position is very satisfactory for examination, while in some cases the lithotomy posture may be adopted.

The examination commences with an *inspection* of the external parts—the gluteal region, the perinæum, the anal skin and orifice. Here may be found the external orifice or orifice of fistulæ situated at various distances from the anal orifice. If these exist the parts are often covered by discharge. An abundance of hair in this region suggests the

* Specially contributed to *The Antiseptic*.

possibility of a tuberculous lesion. The appearance of the peri-anal skin in Pruritus Ani is characteristic; it looks white and sodden, or may have a shiny appearance, and is often moist with a small amount of faecal stained discharge; evidences of scratching may also be present. Ulceration extending on to the skin from the rectum or anal canal may be visible. In other cases, such growths as condylomata may be readily seen. If the patient is made to strain so that the anus is relaxed and the parts protrude, a fissure or internal haemorrhoids may be seen. Other conditions readily visible are prolapse of the rectum, external piles, or abscess.

Palpation of the above parts follows. An abscess may be readily felt and the track of a fistula or sinus can be traced under the skin as a hard cord, and its length and direction noted. Palpation of the anal margin gives an indication of the condition of the external sphincter, whether spasmodically contracted, relaxed or hypertrophied. By drawing down the anal margin with the index finger, especially when aided by the straining efforts of the patient, the lower portion of the anal canal can be brought into view. In this manner a fissure in ano may be readily seen. Internal haemorrhoids may be demonstrated in a similar manner, and their number and position ascertained. For purposes of accurate description and record the anus may be divided by imaginary transverse and antero-posterior lines into four quadrants, and designated the right and left anterior or posterior segments. Internal haemorrhoids will be found to have definite relations to those segments in a majority of cases. Three or four are the most common numbers, although there may be smaller masses situated between, and, as a rule, higher up than, the larger and more prominent folds. In any form of ano-rectal ulceration, the palpation of the inguinal glands on both sides form a necessary part of the examination. The smooth tense character of the Thrombotic haemorrhoid can be readily appreciated by the finger.

To examine the interior of the rectum and anal canal, the index finger of either hand may be used. Vaseline or some other lubricant should be smeared over the finger, so that its whole surface is covered. It should be gradually and gently insinuated, pressure being made towards the anterior part. The entrance of the finger is greatly aided by the bearing down efforts of the patient. Should a fissure be present the dorsal surface of the finger should be turned towards the lesion and pressure made on the opposite side of the anal canal. The surface of the anal canal should be first examined, and after this the lower part of the rectum: finally the finger may be inserted to its fullest extent and

pressure made with the hand against the perineum. While the patient continues to strain, this allows of more than half of the rectum being palpated, as a general rule. After the examination is completed, the finger is withdrawn very slowly. If it be rapidly withdrawn pain may be caused by the sudden contraction of the sphincters. Gentle bearing down efforts facilitate the withdrawal of the finger in a similar manner to its introduction. To palpate the whole surface of the rectum, the finger may be gently rotated, though in painful conditions, and especially where a fissure is present, it is advisable to gently withdraw the finger and re-insert it in a different position. By means of the straining efforts the parts are relaxed, so that the finger enters or is withdrawn more easily, while more of the upper part of the rectum is brought within reach of the examiner's finger. The finger on entering the anal canal is able to appreciate the condition of the external sphincter, whether spasmodically contracted or hypertrophied. A fissure may be felt, if of any duration, as a slightly depressed area with raised edges. Just above the external sphincter a groove is encountered encircling the anus; this represents the interval between the two sphincters. In this groove may frequently be found the internal orifice of a fistula, which appears as an indurated spot or a small depression. The tract from this orifice may pass backwards towards the coccyx, especially when the internal orifice is situated in the middle line posteriorly, or laterally towards the ischio-rectal fossa. In submucous sinus or fistula an indurated tract may be felt passing upwards, or should the drainage be deficient it may appear as a soft and pear shaped swelling projecting towards the interior of the bowel. In the normal anal canal and lower part of the rectum several small folds of mucous membrane may be felt especially when the finger is rotated. In cases where internal haemorrhoids are present, these folds become markedly enlarged and are more distinctly palpable. By rotating the finger and moving it round the whole circumference of the anal canal these folds may be counted, and so the number, size, and position of the internal haemorrhoids discovered by palpation alone. On withdrawing the finger and making pressure on the skin at the anal margin, assisted by the straining efforts of the patient, the haemorrhoids may be brought into view. Above the level of the anal canal the ampulla or dilated portion of the rectum is entered. This part of the bowel is normally empty until shortly before defecation, when the accumulation of faeces here excites the desire for stool. In this portion of the rectum the haemorrhoids may be felt; in addition to these any form of growth may be recognised. In children, a rectal polypus may be discovered, but is very readily missed should it

possess a long pedicle, because it is of soft consistence and is easily pushed in front of the finger into the higher parts of the rectum.

Papilloma of the rectum in adults presents itself as a warty growth which may have a distinct pedicle or be entirely sessile. In later stages of its growth the base may become hardened and infiltrate the surrounding tissues, the further history being that of carcinoma. In other cases while one large growth may be present, the remainder of the rectal mucosa may be studded with numerous smaller growths. Carcinoma of the rectum most commonly starts within reach of the finger, and appears in its earliest stage as a small hard ulcer with raised edges—indeed the suggestion is that there is primary growth and secondary ulceration, and this is a most important criterion as to the nature of any ulcer. Growth in excess of destruction means some neoplasm. In the further stage a larger ulcer partly surrounding the rectum is found, there is considerable elevation of its edges and surface, it bleeds readily on touch and is definitely hard. Finally the bowel may be encircled, narrowed, and feels blocked up by growth, which may be adherent to neighbouring and adjacent structures.

Rectal ulceration may be discovered by the finger. The mucous membrane feels hot and irregular patches of denuded mucous membrane may be felt. The slighter forms of ulceration are impossible to recognise by means of the finger alone. In stricture of the rectum the finger meets with various degrees of obstruction. In some cases the stricture may admit the finger, in which case it may be dilated by this means. In others the tip of the finger encounters an obstruction through which it is unable to pass. The surface may be smooth and feel as if made of scar tissue, or definite ulceration may be present. There is usually some discharge present which may be found on examining the finger, and in some cases blood. By means of the finger in the rectum valuable information may be gained as to the condition of adjacent pelvic organs, in both the male and female.

In many cases an inspection of the outer surface of anal region together with a digital examination of the anal canal and rectum will give complete information as to the pathological condition present. In some cases for further diagnosis or treatment, inspection of the upper portion of the bowel is necessary. The anal canal can be readily seen by means of one of the numerous anal specula. The bivalve speculum is useful. It is introduced in its closed condition and then the blades are gradually separated. The portion of the anal canal between the blades is then seen, and such conditions as an impacted foreign body,

fissure, or internal hæmorrhoids demonstrated. Local anæsthetics can be introduced into the exposed part and small operations or topical applications made. The conical anal speculum with a segment removed is a useful instrument, and can be readily rotated so that the whole canal can be in turn inspected.

To examine the upper portion of the rectum, a proctoscope may be introduced into the anal canal, and while passing upwards the surface of the rectum can be seen. It may be necessary to reflect light into the tube from a head mirror, or in some cases the speculum contains a small lamp. If it be doubtful whether a lesion exists high up in the rectum or in the pelvic colon, the Sigmoidoscope may be used and passed from the rectum into the bowel above. For a satisfactory examination it is necessary that the bowel be empty, and while the tube is in position a swab may be taken of any purulent matter, or a small fragment of growth removed for microscopic section.

In the account of the diagnosis of fistula, no mention has been made of the use of the probe. To determine the course and extent of a fistula or sinus, palpation usually gives sufficient information, while in most cases a careful examination of the anal canal or rectum reveals the internal orifice, should it be present. In some cases a probe is necessary to determine the depth or direction of a sinus, but usually causes pain. In some conditions on account of great pain a cocaine suppository may be introduced into the rectum before examination, whilst in others a general anæsthetic may be necessary. No account of diagnosis should be complete without insistence on the necessity of a digital examination in all cases, even although inspection may reveal gross disease at the anal orifice. Multiple sinuses or large prolapsed and thrombosed hæmorrhoids may be merely an accompaniment or complication of a carcinoma situated a short distance up the rectum. In some cases multiple examinations may be necessary before the true nature of the disease is discovered.

* "TREATMENT OF FRACTURES BY ANCIENT AND MODERN METHODS."

By

W. I. C. WHEELER, F. R. C. S. I.

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MR. PRESIDENT AND GENTLEMEN :—

When you did me the honour of inviting me to become your President for the coming year—an invitation which every old member

*Inaugural address delivered before the Dublin University, Biological Association, Nov. 1910, and sent to *The Antiseptic* for publication.

and officer of the association practising in this city is ambitious to receive—I had little difficulty in choosing a subject for my address. It seems to me that this is an appropriate occasion for the review of the treatment of fractures, when surgeons for the first time in history are introducing drastic and revolutionary changes in methods which until yesterday were considered settled and irrevocable. Secondly, paradoxical as it may seem, the study of fractures must be considered a new one, since operative surgery and X-ray photography have made possible a study of the anatomy and pathology of living bones. And, thirdly, the subject has attained a very considerable medico-legal importance owing to the introduction of the Workmen's Compensation and Employer's Liability Acts of Parliament.

A study of the treatment of fractures makes us realise how slow was all surgical progress up to and including part of the last century. Thirty years ago the late Sir William Lawrence, when opening a clinical lecture on the subject of the kidney, said:—"And now, gentlemen, I will deal with an organ which, thank God, is beyond the reach of surgery," and to-day we find in some of the so-called modern hospitals the adoption of methods for the treatment of broken bone which were practised with *more success* by the Egyptians three thousand years before Christ.

As far back as surgical literature can be traced the principle which governed the treatment of fractures was regarded like "the Law of the Medes and Persians which altereth not." No surgeon ever questioned the necessity of prolonged immobility with or without extension in appliances sometimes simple, sometimes resembling the torture jackets of the Middle Ages.

It is true that the nineteenth century saw the birth of a number of works describing *the mechanism* of fractures, amongst the most famous of which were those by Dupuytren, Hamilton, and Malgaigne. Velpeau had doubts as to the effectiveness of the orthodox methods of treatment, but had not the courage of his convictions, and, like all his immediate predecessors, accepted the claim of Ambroise Pare, the Father of French Surgery who, in 1578, said that he had brought the art of chirurgery to such perfection that there was nothing left for posterity "but a small hope to add some things." Wiseman, who acquired much fame as a surgeon in the reign of Charles II, and who "formed a Bridge of a single plank between the Stuarts and the great eighteenth century school, led by Pott and Hunter," was found advocating operation in certain cases; but beyond this only added to the surgery of fractures

more splints and more extension. Hippocrates and Galen advanced the teaching of their own forefathers, and there seems to be no beginning to the methods of treating fractures which have been accepted as infallible up to our own time.

Yet it should be possible to trace the surgery of fractures to the fountain head, for a bone once broken forms a permanent index *from which* can be gauged the ability of the surgeon or the healing powers of nature, and there is no lack of specimens from the earliest times to enable such a study to be made.

An example of the primitive state of the surgery of the bones is furnished in the works of Sir Astley Cooper as late as 1828. The directions for reducing a dorsal dislocation of the hip are as follows:—Free venesection is at first resorted to, then the patient is placed in a bath at a temperature of 100°, the heat of the water being gradually increased until the patient faints. While he is in the water he is given a grain of tartarised antimony every ten minutes until nausea is excited. He is then taken out of the bath, put on a hard mattress, and the bone put back in its socket. Crude as this treatment appears, it is *not less* scientific than the more modern employment of a long Liston's splint with a perineal band for counter-extension.

The most antiquated surgical appliances ever discovered, with the exception of some ancient instruments for circumcision, were two sets of splints found applied to the bones by the Egyptian expedition from the University of California in the latter part of the year 1907. The application of these splints has been proved, after the most careful scientific investigation, to date about three thousand years before Christ. During the progress of the expedition a cemetery of rock-cut tombs of the Fifth Dynasty (2370 B. C.) was excavated, and in these tombs the splints which shall be briefly described were found intact. They are the only examples of *ante mortem* splints found *previous* to the Christian era, although others were found applied by the priests to the forearm of King Siptah (Nineteenth Dynasty), who received his injuries long after death at the hands of plunderers of his tomb.

The first case was that of a girl, aged about fourteen, who sustained a comminuted compound fracture of the middle of the shaft of the right femur. This was treated by the application of one anterior, one posterior, and two lateral splints, fashioned from the mid-rib of the date palm. It is of special interest that the splints only reached a point about three inches above the site of fracture, although inferiorly they were carried to a level seven inches below the knee joint.

The splints were carefully padded with folds of linen bandage, and were held in position by like material tied in reef knots.

A single pad was found just below the site of fracture covered with rust-like stains which, notwithstanding the lapse of nearly five thousand years, had the appearance of remarkable freshness. That these were blood stains is undoubted from the circumstances *under* which they were found in numerous instances. The pad was probably employed to cover the wound in the soft parts and to control hæmorrhage.

The presence of blood was extremely significant, for in *ante mortem* fractures the broken ends of the bones were copiously stained, and, on the other hand, when a fracture had been produced *post-mortem* by plunderers of a tomb, the blood marks were conspicuous by their absence.

The second case—a fracture of the forearm found, with splints *in situ*—was discovered by a strange coincidence in the same cemetery, for together these two cases constitute the only known splints applied to living patients earlier than the Christian era. As in the first case, this fracture was probably compound, for a stained pad of vegetable fibre was found pushed into the medullary cavity of the ulna.

Probably the fracture was treated as follows:—

The wound was first plugged with the pad of vegetable fibre. A bandage (also found in good condition) of much finer material was wound carefully round the forearm, and the splints were then applied. Each had a natural curve, forming with its fellows a tabular casing for the forearm. A gap between the splints at the back was filled in with a bundle of coarse grass. The whole was bound to the arm with broad linen, secured by tapes of folded bandage.

It is clear from the study of these two cases that splints were used by the ancients more as a protection from external injury than as a means of holding the bones in position. This is *particularly* evident in the first case, where they only reached about three inches above the site of fracture. It is impossible to tell *how generally* splints were used at these periods in the world's history, but the presumption is from a study of many hundreds of fractures, to which they were found applied only twice, that their employment was extremely limited.

In accordance with the strict conservatism which has characterised the treatment of fractures in all ages, the Egyptians in the Christian era *three thousand years later* were found treating fractures in almost precisely the same way. Two thousand years subsequently—so late as 1903—the medical officer in charge of an expedition into Abyssinia re-

ported that patients with broken arms flocked to him, wearing splints in no way different from those just described in the case of the girl five thousand years before. It is not, however, with the sole view of demonstrating the want of progress through the ages that the study of ancient methods of treatment is of interest. In many cases the ætiology as well as the character of the injury is rendered very definite, and the results found are almost perfect. For example, in the case of the bones of the forearm the frequency of fracture was great in by-gone ages as it is now. The ulna was most constantly injured, probably owing to the use of the naboot—a stout staff employed for purposes of offence and defence by the ancient Nubians.

The left arm was raised to guard the blow, and was fractured in a large proportion of cases, the subsequent union being all that could be desired. The results of the treatment are remarkable. In eleven cases of fracture of the humerus there was only one bad result. In fractures above the middle of the shaft of the femur union was almost end-to-end with little development of callus. The worst case had but scarcely two inches shortening; in two cases there was only half an inch difference in measurement, and in many the difference was imperceptible. Below the middle of the shaft the apposition of the fragments was not so good, but compared favourably with the results of modern treatment. Fracture of the clavicle showed the worst results, and gave the only examples of ununited fracture. It is interesting to compare these ancient specimens with the broken bones found in modern times among the uncivilised races who have not had access to the methods of white men. Examples of these can be found in the Anthropometrical Museum of Trinity College amongst what is known as the Hadden collection of bones. The specimens are gathered from the remains of the natives of Torres Straits between New Guinea and Australia, and comprise several beautiful examples of healed fractures of the skull, in addition to fractures of the humerus, radius, ulna, and fibula.

The first specimen demonstrates a double fracture of the humerus, one immediately below the tuberosities, the other below the insertion of the deltoid. From the severity of the injury or injuries it is not to be wondered at that marked shortening is the result, though the chief displacement is a rotatory one, the internal epicondyle having passed forward through an angle of 45°.

There is slight angular deformity due to the action of the triceps, a displacement which was noted in healed fractures of the humerus found during the Egyptian excavations.

rather than to hold deformities reduced, and the results of treatment on classical lines seem to justify the assumption, it is surprising their general use, with the attendant pain, stiffened joints, adherent muscles, and persistent œdema, should have been countenanced for so many years.

Erichson was one of the last great writers to adopt an attitude of *laissez faire*, but his opinions as to the finality of surgery have been effectually shattered in the case of fractures by the dawn of an era inseparably associated with three names—Arbuthnot Lane and Sir William Bennett of London, and Lucas Championniere of Paris. These, although not the first to discard the fossilised methods of surgical ages, were discoverers in the sense laid down by Sidney Smith: "That man is not the first discoverer of any Art who first says the thing, but he who says it so long, so loud, and so clearly that he compels mankind to hear him."

Lucas Championniere, whose methods were modified and popularised in England by the work of Sir William Bennett, was the first to show the absolute futility of the treatment of fractures by prolonged immobilisation in splints, and to insist that clinical observation must alter methods based on ancient usage. He ascribes his courage in condemning customs which had become almost a religion in surgery to the great examples of Lister and Pasteur.

By gradual stages he arrived at the principles of his treatment of fractures which are now adopted in their entirety or with modification all the world over.

First, he began by lessening the degree of immobility, then he did away with immobility altogether; after this he commenced movements at an early stage, and then practised them immediately after the injury. Finally, he adopted the general massage of the muscles and joints and even encouraged movements of the bony fragments during repair.

Two primary conditions are laid down for the performance of the movements recommended. First, they must be painless, and secondly they must cause no new displacement. The massage is essentially different from that of ordinary masseurs; it must be at first soft and smooth, taking the form in bad cases of slight mobile pressure in the direction of the venous current. As Lucas Championniere expresses it—Let it be a "mere caress." In this way movements are administered, so to speak, in measured doses, just as a medicine or a dose of X-rays.

It would be impossible to give even an outline of the results of the forty years' work of this great pioneer in the time at our disposal—he deals exhaustively with every condition of fracture. Suffice it to say

The final result, taking into account the double fracture, cannot be said to be unsatisfactory.

The second humerus in this series is an example of an oblique fracture below the insertion of the deltoid, the line of fracture travelling from in front downwards and backwards, so that the adjacent ends of the fragments overlapped.

The fracture united with no rotatory displacement and with apparently very little shortening, the amount of which could not be accurately estimated owing to absence of the bone of the opposite side. There is in this case also slight angular deformity.

In one example of Colles fracture the union is almost perfect, there being but 7 mm. elevation of the styloid process. The fracture could not be detected but for the slight alteration in the direction of the facet.

Four fractures of the ulna at different levels in each specimen have united with practically no displacement.

Comparing these fractured bones and those found by the Egyptian expeditions with the specimens recovered from the victims of quite recent surgery, examples of which are to be seen in the Museum of the Royal College of Surgeons in Ireland, our sympathy must rest entirely with the modern patient treated by orthodox methods.

The successes of the Archaic surgeons, without having recourse to prolonged fixation or extension, taken with the results obtained by uncivilised peoples, are surely an ancient justification for the modern "antifixation" teaching of Lucas Championniere.

The high standard of repair found in fractures, either untreated or treated in a manner far removed from methods of immobilisation, proves there must be a wonderful self-adjustment of the fragments in the mending of broken bones. The immediate forces causing displacement sooner or later become antagonised; muscle-spasm ceases through fatigue and is counteracted by the action of other muscles not yet brought into play. This secondary action of muscles may be helped by natural forces, such as the weight of the limb.

This brings us to the question that, given an oblique fracture with marked overlapping, is it possible to reduce the deformity and hold it reduced by the application of splints? Is it not more likely that the overlapping will remain or recur and the application of the splints prevent the natural adjustment of the bones to which reference has been made? If the prolonged use of splints tends to maintain malpositions

that he treats fracture of the patella by operation, but of the olecranon by massage and movements which produce a perfect result in about fourteen days. In fractures of the neck of the femur he suggests treatment by movements more than massage, and recommends an attempt to walk in nine or ten days. He claims that the reduction of a fracture is only a relative necessity, which should not be resorted to unless deformities of the axis of the bone are incompatible with the function of the limb.

Reduction is useless, he says, in the lower third of the leg, in the shaft of the humerus, in all fractures with impaction, and moderate deformity, in most cases of fracture of the upper end of the femur and humerus and all fractures produced by muscular action.

As regards operation, Lucas Championniere naturally prefers his own method and reserves operations, of which he has had very great experience, to those cases which will yield to no other method.

Bennett quotes a remarkable case of complicated fracture treated by early movements and massage. In fifteen minutes the pain was gone, a distinct analgesic action having been produced. This he attributes to many causes, such as the reduction in the tension of the limb by the mechanical unloading of the muscles, and the reflex action on the nerves, which brings about the disappearance of muscle spasm. Dr. Dagrán has seen dislocation of the shoulder spontaneously reduce owing to the relaxation of the muscles during gentle massage.

At first sight it is difficult to reconcile the principles of Lucas Championniere with the contentions of Arbuthnot Lane. The latter insists on absolute anatomical reduction of the deformity by operation in practically every fracture. One can see in the writings of the Parisian surgeon a fear lest Lane's method is a continuation of treatment by reduction and fixation, and that the use of plates and screws is but a glorified system of internal splints.

The two contentions are not, however, on so diametrically opposite a basis as at first sight appears. Both surgeons see that reduction, or so-called reduction, of a fracture with prolonged immobility in splints is futile. The one is able to produce excellent functional results by attention from the first to muscles, nerves, vessels, and joints, and obtains in so doing great assistance from nature in the way of natural self-adjustment of the broken fragments. The other seeks not only good functional results, but ensures anatomical perfection in the only possible manner—*i. e.*, by open operation and the securing of the fragments by his plates and screws which are now of world-wide fame.

As we are honoured by the presence of Mr. Arbuthnot Lane to-night I will not presume to describe his principles and methods.

In a well-equipped hospital the operative treatment is the best, and likely to produce results which will ensure that the labouring man is discharged quickly, suffering from no disability. In private practice, on the other hand, when massage and careful daily attention can be obtained by paid masseurs and assistants Lucas Championniere's treatment, or some modification of it, is the least anxious for the surgeon and produces excellent results. In every case of fracture, where, after reasonable trial, the apposition of the fragments as shown by an X-ray photograph is not sufficient to guarantee a useful limb, operation is undoubtedly indicated. Such cases, too, are far from the exception.

It is unnecessary to add that when, after careful examination, little or no displacement of the bones is found produced by the injury, operation is contra-indicated.

It is no exaggeration to say that to-day there is still a large body of surgeons who only nibble at the two methods of treatment referred to, and that massage and movements, on the one hand, and operation on the other, are only adopted in a half-hearted manner. The mechanical ingenuity of these gentlemen is ever "lavishly expended in devising splint and apparatus, and the cry is still they come."

There are some few who, disregarding the teaching of the new schools, persist in treatment by prolonged immobilisation in splints, and point to the case of the Chinese lady's foot, which was immobilised all her life, and yet the joints, even when examined microscopically, appeared in every way perfect. We are left to imagine, however, the physiological value of this microscopically perfect set of joints. To use the words of a recent writer—"It is a convincing illustration of the inutility of morphological perfection."

In conclusion, I think the medico-legal aspect of fractures to-day is of paramount importance to every practitioner. It is not so long ago since the decision against Lynn Thomas and Skrynee rendered it dangerous for any surgeon to depart from lines of treatment laid down in text-books. Courts of law are for the most part in sympathy with this position, for, by the nature of their training, judges attach great importance to written authority. But this anomalous state of affairs is surpassed in the endeavours made by tribunals with the little knowledge of medical matters which is proverbially dangerous, to adjudicate in cases of fracture in civil actions and under the Workmen's Compensation Acts. It is of daily occurrence in the courts to see medical expert witnesses on both sides illustrating to a bewildered judge the

many-sidedness of truth. X-ray photography has rendered the lay judge still more liable to pitfalls. If this is true of a photograph, it applies still more to a skiagraph. Very slight lack of skill or care on the part of a radiographer may lead to the production of a most deceptive picture. But, assuming a perfectly produced *bona fide* X-ray photograph is forthcoming, we all know what a high degree of practice and skill is necessary before it is possible to interpret what the picture reveals. The overlapping and shortening with which such an authority as Lucas Championniere is often content, provided a good functional limb is produced, will secure a verdict with heavy damages from a jury misled by the apparent simplicity of an X-ray photograph. Counsel for the plaintiff is in his element when he is pointing with relentless finger to the radiograph which shows the slightest deviation from the normal bony contour.

It is necessary that the public should be educated to the fact that an *apparently* bad result, as seen by a skiagraph, is not necessarily a bad result, and may be all that science can do, short of immediate operation on the limb, to which so many of the public object.

We must hope that the time is near when an extension of the medical referee system will be adopted, and, instead of employing a distinguished surgeon or physician to sit beside the judge in a few isolated cases, that the Government will appoint medical men with the salaries of judges to adjudicate (with the judges) on questions which medical men alone are competent to decide.

[The lecture was concluded by lantern illustrations of a number of difficult cases treated by the author by operation.]

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"ALIMENTARY AUTO-INFECTION."

BY

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If somatic death in the natural state be looked upon as the culmination of a chronic toxæmic process that in the course of time gains the upper hand over the resisting powers of the body, it becomes at once important for us to investigate the causes of the so called "toxæmias" that bring about this least desired termination. Acute and severe toxæmias overwhelm the organism with an unmistakable frankness, and a suddenness we were not prepared for. The chronic toxæmias, on the other hand, are insidious in their approach; they steal over us imperceptibly by daily degrees, in such a manner that when once their ravages are sufficiently marked to be recognisable, the malady has generally become established and resistant to treatment.

An acute infection is the result of at least one large dose of a more or less virulent poison; it can usually be avoided by isolation from exposure, and care. A chronic infection, on the contrary, is the summation of the poisoning by minute doses of less virulent toxins assimilated into the body or elaborated therein during a prolonged course of our apparently healthy lives. This chronic toxæmia is difficult, if not impossible, to avoid altogether. It gains in toxicity every day of our lives and it is fostered by our daily round of habits or by the 'regular irregularities' of our bodily activities. The importance of the subject of infections *via* the alimentary canal is thus evident.

What are the main routes of infection in the body? The alimentary canal, the respiratory canal, the genito-urinary canal, are the chief.

In all these routes, the actual entry of the infective materials into the tissues or blood is decided by the lining cells of the mucous surfaces, that are rendered incapable of resisting the constant stream of infection—bearing substances flowing past them. Just as a skin abrasion opens a door to blood infection, a mucous surface abrasion also brings about a similar state of affairs. Of all these routes of infection, the alimentary canal is the one most exposed to injury of an autogenous nature. The very length of this route renders extrusion of substances of an injurious composition from within its middle vaults a matter of some difficulty. This extrusion can only be effected by an extraordinary stimulation of the peristaltic action of many a feet of bowel wall. The pe-

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ular shelving arrangement of the lining mucous membrane, and the coiling of the bowels into numerous loops, exert a retarding influence on the progress of the intestinal contents. The alimentary canal may be looked upon as a tunnel through the body, beginning at the lips and ending at the anus. It is practically a "thoroughfare"; and unfortunately, it is a thoroughfare where the traffic is allowed to go on with but little restriction imposed on it. The whole course of the tunnel, which means many feet of mucous membrane, is lined by cells that normally display a selective power on digested food materials, and a hostile attitude towards the injurious constituents of food. Destruction of these cells would, therefore, cause deficient absorption of nutriment as well as let in poisons from the bowel. Shall we compare this latter defect to a leakage in a city drain pipe, where, the foul contents pour into the neighbouring soil and in course of time pollute the whole soil? Our keratinised skin epithelium can stand a good deal of wear and tear in its contact with the outside world, and thus keep off blood infection from outside; but the delicate intestinal epithelium cannot afford to be treated so roughly, as its structure is designed more for absorptive purposes than protective. The general plan of the alimentary canal may be stated thus:—

It is a canal constructed for the transmission, digestion, absorption, and excretion, of the different components of the stream of food materials. Normally, septic materials (organisms or their products) are found at the two extremes of the canal, in the mouth and pharynx, and in the colon. These may spread downwards or upwards in disease conditions. The intermediate portions of the alimentary tract are in health protected from germ infection, by means of the destructive or inhibitory action of the HCl. of the gastric juice, and the bile of the succus entericus, which if secreted in sufficient quantity and concentration leaves little undigested food residue as pabulum for bacterial multiplication. But the stream of food may become infected by pollution occurring at the very source of it. In other words, an oral infection, if it pollutes the stream of food, may not only affect nutrition, but may also disseminate that infection into the parts of the canal below. Let us now consider briefly the chief seats of chronic infection in the alimentary canal. In the *mouth* we have the first line of defences against organismal onslaughts. A lowering of resistance on the part of the epithelial lining, combined with the lodgment of dust or food debris in the interstices between the teeth, favour bacterial growth. Various conditions may be present—stomatitis, gingivitis, *pyorrhoea alveolaris*, glossitis, pharyngitis (including adenoids

and hypertrophied tonsils) etc. Of these, "*Pyorrhoea Alveolaris*" demands our attention most. This condition has become so common that few of us think it as likely to give rise to serious constitutional diseases like pernicious anæmia. "*Pyorrhoea alveolaris*" includes all conditions that lead up to abscess formation, at the roots of the teeth—"tartar", caries, septic teeth, etc. Bacteria multiply in the food debris that has been jammed in between the gums and the teeth (the circumferential sulci,) and start an inflammation in the gums—"gingivitis." The inflammation extends deep down to the periosteum and bone (causing periostitis, osteitis and necrosis), and the alveoli of the teeth where abscesses are formed, and pockets of infective pus are retained in rigid bony cavities until mastication squeezes some of it (not the whole out and mixes it with the food that is to be swallowed. Bad taste in the mouth early in the morning, fætor of breath, tender teeth, neuralgia, are some of the signs of this affection. The condition of a pyorrhœic mouth may be described in the words of Dr. Joseph G. Turner, thus: "The diseased tissues round a tooth affected with *P. Alveolaris* are practically an absorbent ulcer. Supposing 16 of the 32 teeth with an average root circumference of 1 inch are affected to a depth of $\frac{1}{2}$ inch, this gives an ulcerated surface of 5 sq. inches. Such an ulcer undrained in any other part of the body would be regarded with the greatest concern." This septic material can infect the blood by direct absorption from the abscess cavity, or by travelling with the food down the digestive tract and presenting to the absorptive intestinal mucosa, not a harmless, but a toxic, mixture of chyle and bacterial products. Coming to the stomach, we find that any condition (*e. g.*, chronic gastritis, etc.) that reduces the quantity of the bactericidal hydrochloric acid of the gastric juice, favours bacterial activity, especially if complicated by gastric atony. An excessive quantity of proteid food,—a quantity too large for the Hcl. equivalent of the gastric juice to combine with—may leave but little acidity in the chyme to excite pancreatic secretion.

The bile itself is supposed to possess some anti-bacterial property. When once the pancreatic juice with all its constituent ferments is mixed with uninfected chyme in sufficient quantity to satisfy all or most of its affinities, we need not expect any putrefaction to go on in the small intestine, provided that no bacteria or parasites have found their way from the colon or elsewhere.

*The infective Materials; (a) The infective Organisms:—*In the mouth, staphylococci, streptococci, pneumococci, etc.

In the small intestines—*B. Lactis aerogenes*, cholera, typhoid tubercle *B.*, parasites, intruding *B. Coli*.

The large intestine—*B. Coli* (normal), *B. Putrificus*, *B. dysenteriae* etc. The *B. Coli* may work itself in various directions—Kidney, joints, etc.

(b) The *infective toxins* in an unhealthy alimentary canal are:—those derived from putrefying proteids—phenol, indol and skatol, sulphates, ptomaines; leucina, tyrosin, acetone, etc.... Those derived from fermenting carbo hydrates—oxalic acid, formic acid, acetone, lactic acid (inhibits putrefaction); those derived from fats—fatty acids (not toxic) and glycerine. The test for Indican (= Indol + K_2SO_4): Urine + HCl + Sol of K: NO_3 , shake + 10 c.c. C.H cl. $_3$, Shake = purple color in C. Hcl. $_3$.

In ordinary cases of auto-infection the toxins alone find their way into the blood; in rarer cases, the organisms themselves enter the blood stream (septicæmia). From the alimentary canal these toxic substances reach the general circulation along the portal track.

The signs of auto-infection are only evident when the system is intoxicated with the poisons absorbed. Some types of affections may be mentioned:—

The *skin*—Erythema, Urticaria, Lupus Erythematosus, Dermatitis, icterus.

Muscles—Polymyositis.

Alimentary *tract*—mouth and pharynx, and in the colon... downwards or upwards in the intermediate portions... Constipation; gastritis and enteritis with vomiting. Eructation, anorexia, diarrhoea, colic.

Gastric ulcer, pancreatitis, appendicitis, etc.

Urinary system—albuminuria, hæmaturia, acetoneuria, xaluria, etc.

Central nervous system—Headache, giddiness, insomnia, dulness, coma, convulsions, paralyses, psychoses, constitutional cachexia, diabetes, uricacidæmia, anæmia (hæmolytic), rheumatism, arteriosclerosis and cardiac degeneration. Practically, therefore, each of this multitude of complaints may be traced to different special kinds of poisons elaborated in the alimentary canal, and circulating through the blood in the various tissues of the body.

What are the natural safe-guards against this infection? In other words, what are the factors that go to make up what is called the "resistance" of the body to these infections from the alimentary territory?

The prime factor in the defence is the phagocytic power of white blood corpuscles, and the anti-toxic properties of blood serum. These may be termed the 'reserves' held in readiness to encounter the invading intruders. But, before the reserve force is sighted, several lines of outposts have to be carried by the invading toxic bodies.

In the mouth, the vitality of the epithelium may be impaired and the healthy buccal secretions deficient in quantity or defective in quality to entangle bacteria and expel them through the expectoration.

In the pharynx, the tonsillar and other lymphoid advance posts of defence, may become diseased, and after hypertrophy, harbour millions and millions of bacilli in their crypts. The healthy oesophageal tube does not allow of oral infections to spread by mucous continuity to the stomach—(as we infer from a diphtheritic infection limiting itself above the oesophagus).

In the stomach, the Hcl. of the healthy gastric juice has germicidal properties; and, food is not allowed to linger longer than is necessary and ferment inside a stomach with normal power of motility. Or, if the toxic body is sufficiently irritating, emesis is induced as a safe-guard. In the duodenum the bile and other juices exert a certain amount of bactericidal property.

And if the intestinal reflex is sufficiently sensitive and no obstructions exist, a timely diarrhoea saves the body from a general systemic infection.

The next important post of defence is the liver. Poisons of various kinds are destroyed or neutralised here, and converted into innocuous bodies excreted without much disturbance of the general health. Even this defence may be carried when the liver is disordered or cirrhotic as the result of an influx of toxins beyond its powers of neutralising.

When all these safe-guards have failed, the toxic bodies have entered the general circulation. And now the "reservists" are called upon to defend the body from threatened extinction. The leucocytes put into operation their phagocytic weapons on the organisms intruding into the blood stream. The toxicity of the poisons is neutralised by certain antidotal substances already present in the blood serum or induced to appear by the stress of infection. These are the alexins (from leucocytes), the antitoxins, the bacteriolysins, the opsonins,—bodies of undetermined composition. It is the presence of these bodies or their precursors in the blood that enables the bowel epithelium to repel attacks from the putrefying intestinal contents. If the blood has not a supply

of these in the required concentration the resistance of the body is below par, and auto-intoxication ensues.

The diagnosis of intestinal auto-infection depends upon an examination of the urine for bodies like indol, and of the fæces for signs and evidences, of putrefaction. Even in the absence of elaborate analytical appliances a study of the fæces as regards its consistence, colour, and odour (as distinguished from the normal) would give us a clue to conditions of fermentation going on within the alimentary canal.

Treatment: We are now in a position to outline the general principles of treatment in cases of suspected or real auto-infection in the alimentary canal.

The campaign against bacillary invasion of the alimentary canal may be conducted on (1) *defensive*, as well as on (2) *offensive*, lines. Asepsis of the canal is not easy, if at all possible, of accomplishment. The more important and delicate middle portions of the alimentary canal should be guarded from the trespassing pathogenic bacteria from the two extreme ends—the mouth and the colon—their habitual haunts. Even in these two latter locations, sufficient time should not be given them to weaken the surrounding tissues by their increase in numbers or their acquisition of virulence.

Already, microbes form one-third of the total solids of the stools, though most of them are dead in the healthy bowel. So long as bacteria cannot be excluded from the intestines, our aim should be to limit their activities within the physiological requirements of the body, by keeping down their vitality. Or, as Metschnikoff has suggested, attempts may be made to colonise the bowel with the lactic-acid-producing bacilli that are less likely to break out into fits of rebellious disloyalty to the human body.

Now, how shall we strengthen our lines of defences? The oral cavity offers the key to the situation. "Cleansing of the mouth" should be made a more comprehensive term than is usually understood. If dust particles can be germ-carriers, is it not important that the mouth and throat should be cleansed each time after we have been in the dust? The habit of gargling our throats, before as well as after any meal (or even an "ice-and-soda"), should be encouraged. It is always safer to take only cooked foods carefully kept from contamination. The function of mastication should be intelligently performed, paying attention to a free flow of saliva, and the scouring action of coarse particles of food—(a soft, sloppy meal would fail to counteract tendencies to stagnation at the necks of the teeth). The remains of food

debris lodging between the teeth should be removed by brushing the teeth after meals. Picking the teeth may not be harmful if there are no organisms at the part picked; but to pick the teeth long after meals must not be thought of, especially when the gums are liable to bleed easily and expose a raw surface for organisms to settle down upon. Irritating antiseptic gargles, used daily, would of course maintain the oral cavity nearly aseptic; but their frequent use deprives us of the phagocytic services of the mouth epithelium. Pure water, or water with a little soda or borax in it, used often in the day is about the best. Mouth-breathing, awake or asleep, should be forbidden or treated according to its causation.

The natural defences in the stomach and the small intestines must be reinforced by supplying the stomach with hydrochloric acid where that is deficient, and with diastatic ferments in cases with butyric fermentation. Excess of food must be prohibited. It is more important to do all we can to promote prompt digestion and absorption, than to combine with the meals anti-bacterial ingredients foreign to the tissues. Lactic acid therapy has not justified the extravagant claims boomed about. Metschnikoff advised the use of *living* bacilli of the *Bulgarian* strain, in the treatment he advocated. But, many of the commercial tabloids would be found to contain no *Bulgarian* bacilli, dead or alive. "Only fluid cultures, or milk actually soured by, and containing, the bacilli should be used." The bacilli are too delicate to survive the processes of manufacturing them into tabloids. The cases in which the lactic acid treatment is unsuitable are "cases of hyperchlorhydria, those of intestinal carbohydrate fermentation, and especially those of a rheumatic character." Benefit may be derived, in neurotic patients (amenable to suggestion), in patients who take considerable quantities of nourishing food (it is of benefit in diabetes), and in those in whom the symptoms are due to a specific bacillus that cannot thrive in an acid medium. If the fresh fæces is acid, no good will result from the treatment; if alkaline, and remains alkaline for 24 hours, we may expect much benefit from it. A sluggish liver should be put right.

Asepticity of an ulcerated bowel is a counsel to be preached; but it is not possible of realisation in spite of Salol, Tenacol, Thymol, Naphthalene Tetrachloride, and a host of other antiseptics. Could not the powers of resistance of the body be augmented by reinforcing the blood serum in man by another (like the horse-serum)? The horse-serum may supply to the human body those antitoxic substances or their precursors that man's blood is deficient in under the conditions we are considering.

The campaign of attack may be briefly outlined thus :—

Where bacteria have already taken up positions, under a tooth, or in the tonsils or in the adenoid tissues in the pharynx, these strongholds must be captured and the enemy routed to extermination. A pyorrhœic tooth is best removed (taking care to render the part aseptic by about a week's treatment before the extraction of the tooth). If extraction of the tooth is out of the question, open the abscess and drain the cavity freely. In the earlier stages of circumdental inflammation, with gingivitis, etc., frequent use of the tooth brush should be enjoined, together with the application of antiseptic lotions like H_2O_2 , or a mixture of citric acid in carbolic acid solution. When tartar accumulates, the teeth must be scaled. (Does the "chewing" of betel-leaf, etc. promote oral antisepsis?) In the throat, hypertrophied tonsils or adenoid tissue would require removal.

When bacteria have invaded the stomach, lavage should be practised, and food reduced in quantity and supplied in an easily digestible form. Intestinal fermentation should be met by the promotion of digestion, by antiseptics, and by preventing stagnation. We have seen how a loaded colon may infect the upper parts of the canal by fæcal mass continuity. Our aim should therefore be to obtain regular daily evacuations of the colon. The colon should empty itself once in twenty-four hours—by one or more acts of defæcation. A laxative that would operate on the colon without disturbing very much the digestive processes in the small intestine, should be chosen. Cascara, aloes, senna, are some of these. After prolonged neglect of cases of constipation, laxatives can exert their tonic effect only when the bowels have been opened by a purgative. Such purgatives only should be chosen as will not produce a detachment of the bowel epithelium. Castor oil is a good one for this purpose (if it can be smuggled past the throat). Irrigation of the colon is another alternative, provided care be taken not to over-distend the walls of the colon.

I may also mention the treatment by vaccine where any special infectious organism is suspected. Surgically, irrigation through an appendicostomy wound is a tedious process of treatment. And the extreme course of "excision of the colon" would only be submitted to, as there are many chances of abruptly ending thereby a life of suffering that usually comes to a termination by a protracted process of dissolution.

Our Contemporaries.

MEDICINE.

The Ætiology of Hydrophobia.

In this country, owing to our insular position and a scheme of effective quarantine, rabies is now practically unknown, and research into its cause is therefore at a standstill. Abroad, however, this is not the case, and the latest investigations of Negri, published in 1909, are being accepted as an advance of knowledge which is of permanent value. Negri has demonstrated certain bodies in the protoplasm of the nerve cells from cases of hydrophobia, which undergo a cycle of development and finally sporulate. He regards these forms as protozoal, and as the parasitic cause of rabies; and other workers seem to be coming to the conclusion that he is right (Reichel, Whittington, Frothingham). These bodies were first described by Negri in 1903; they are round, oval, or elliptical in shape, and are never found except in rabies. The name neurocytes has been given to them, since they are confined to the cells of the central nervous system. In size they vary from 2a to 8a in man; in some other animals they may be 20a or more in length; there may be more than one in a cell. Their seats of predilection are the pyramidal cells of the horn of Ammon, and the Purkinje cells of the cerebellum.

The neurocytes stain well with eosin, and Negri especially recommends Mann's and Romanowsky's stains. Many other stains will give good results, and osmic acid is said to show them up well. The structure of the Negri body is somewhat complex. Numbers of very small, round, highly refractile particles are to be seen; and there are also larger forms, round or oval in shape, less refractile, and granular in appearance, of which but one or two are contained in each neurocyte. Transition forms between these two exist. These masses their discoverer regards as chromatin. There is yet another kind of content in the neurocytes which is supposed to be connected with spore formation. The spores themselves are believed to be ultra-microscopic.

Certain criticisms on these observations were offered three years ago. It is objected that the Negri bodies are never found in material that is surely virulent, such as the saliva, the salivary glands, and the nerves. The answer is that the virus is conveyed from patient to patient in the spore form, too minute to be detected microscopically. To this Frosch says that the virus of rabies passes through filters the pores of

which are so fine as to be impervious to the smallest particles yet seen in a neurocyte. It is also said that the neurocytes are absent altogether during the incubation period, though the nervous system is already then infectious.

In dogs deceased from hydrophobia the Negri neurocytes are found in 98 to 99 per cent. Even in the few exceptional cases it is said that changes can always be detected in the plexiform and Gasserian ganglia, consisting of atrophy of the cells and invasion by the endothelium of the capsule. This is not specific to rabies, but is a valuable adjuvant to the Negri bodies as a means of diagnosis, and is always to be regarded as suspicious. These pathological discoveries have not yet been put to any practical application in the prevention and treatment of the disease, except in so far as they facilitate the diagnosis in the case of a suspected dog.—*The Hospital*.

A New Sign for Malaria.

In a contribution to Dr. Ciro L. Urriola, Physician to St. Thomas's Hospital, Panama, describes a means of determining the presence of malarial disease in a patient in whom failure to find the parasite in the blood by microscopic examination renders the diagnosis doubtful. As the author points out, the malarial parasite is not permanently present in the blood. It may disappear temporarily at the commencement of a febrile attack or under the influence of quinine, and it may be absent in certain pernicious forms with special localisation, and especially in all the latent forms and in malarial cachexia. On this account further diagnostic signs have been brought forward in the agglutivative power of malarial serum on normal blood and in the presence of urobilin in the urine. On various grounds however, these two signs have been shown to be not altogether reliable or pathognomic. Dr. Urriola's sign consists in the presence of granules and masses of black pigment in the urine. At first the author sought for these pigment masses in the blood, but has now substituted examination of the urine. This latter method obviates the necessity of pricking the patient for the blood, and the pigment is much more abundant in the urine and therefore more easily found, and cannot be mistaken for anything else. According to the author these pigment masses can always be found in the urine of a malarial patient. The pigment occurs in fine granules and also in masses. Sometimes granules of a blue pigment are also found either free, or in hyaline plates, or in vesical epithelial cells. More rarely are seen masses and granules of pigment of an ochre colour. The author reports

several interesting cases of an obscure nature in which the diagnosis of malarial origin was made by examination of the urine, and led to proper treatment and recovery of the patients.—*The Hospital*.

The Treatment of Migraine.

The following prescriptions are recommended by Rankin (*Clinical Journal*): (a) chloride of ammonium, 15 gr.; phenacetin, 10 gr.; codeine, 1-3 gr. (to be dispensed either in the form of a powder or of two cachets) (b) antipyrine, 10 gr.; salicylate of soda, 10 gr.; tincture of gelsemium, mxx ; spirits of chloroform, mxx ; water to one ounce; (c) heroin, 1-12 gr.; dilute hydrobromic acid mxxx ; citrate of caffeine, 5 gr.; compound tincture of cardamom, mxx ; chloroform water to one ounce. In the case of all of them directions should be given for a dose to be taken every two hours for three doses and every four hours thereafter until the pain is relieved. In women when the migrainous attacks recur only at the menstrual times, the use, for a week before each period, of chloral hydrate, 10 gr., and bromide of sodium, 20 gr., given 3 times a day, is often successful, he states, in suppressing the attack or in diminishing its severity. When the temporal artery on the affected temple is prominent and throbbing, steady pressure over it may succeed in affording temporary relief.—*The Canadian Practitioner & Review*.

Car Nausea.

W. McL. Ayres finds, in an examination of his case records, that 75 patients complained of car sickness, this sometimes being the chief complaint. While it was often associated with headache, asthenopia and stomach trouble, yet it was a marked symptom. Stomach trouble was the most frequent accompaniment. Before thoroughly studying his data Ayres had a decided impression that the majority of the patients would show astigmatism against the rule, either simple or compound, and that the proportion was greater in hyperopic than in myopic astigmatism. Of the 75 patients 30 had plus astigmatism contrary to the rule, and 21 had plus astigmatism with the rule. In his case records he found only 58 having astigmatism against the rule, so that 51 per cent. of patients having astigmatism against the rule suffered with car nausea while only 3 per cent. of those having astigmatism with the rule complained of it. In both simple and compound myopic astigmatism the proportion is much

less and only one-fourth of the few cases having myopic astigmatism against the rule complained of car sickness, this being just one-half as many as found in plus astigmatism against the rule. Car sickness was found in every case to be associated with astigmatism either with or without some other form of ametropia; it was found in mixed astigmatism and in 55 per cent. of those unusual cases having astigmatism against the rule in one eye and with the rule in the other. The wearing of correct lenses cured the nausea completely in many cases while in other cases it relieved it very greatly, with only an occasional sensation of nausea on the train. All cases were greatly benefited by glasses not only in respect to the train sickness, but also in the relief of vertigo, headache, asthenopia and stomach trouble.—*The American Journal of Ophthalmology.*

Diabetic Coma.

At a recent meeting of the Berlin Medical Society two interesting pieces of research were brought to light and reported upon, one dealing with the pathology of diabetic coma and the other with the glycogenic function of the liver. Dr. Ehrmann finds that a coma analogous to diabetic coma in the human organism can be produced in rabbits by the administration of sodium butyrate. The animal treated in this way becomes apathetic and unconscious, respiration is retarded so as to fall from eighty a minute to less than forty-five. The expirations are prolonged and the respiratory movements have a greater amplitude. The eyeball loses its tension just as in diabetic coma, and the urine contains diacetic acid and *δ*-oxybutyric acid. There is a diminution of alkalinity and of carbonic acid in the blood. The author maintains that the diminution in carbonic acid is not responsible for the coma, as he has produced the same deficiency of carbonic acid in the blood by administering other substances such as sodium isobutyrate without inducing coma. The same results have also been obtained in dogs which, as the author points out, is the more satisfactory, seeing that canine metabolism is more closely analogous to human than is that of the rabbit. The "acidosis" theory of diabetic coma is based largely upon the fact that a condition in some way analogous to diabetic coma is produced in animals by the administration of acids, but sodium butyrate is neutral or slightly alkaline, and the condition produced appears to present a much closer similarity to diabetic coma. Dr. Ehrmann is still engaged in further research on the problem.—*The Hospital.*

Radiography in Medical Diagnosis.

BY

WM. PASTEUR, M. D., F. R. C. P.

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GENTLEMEN,—We all know what radiography has done for surgery; the surgeon of to-day may almost be said to work with a radiographer at his elbow. But the physician, and I speak to you as a physician with only the barest knowledge of the technique of radiography, is only just beginning to realize what the X-rays are going to do for medicine. Nor is this surprising. The problem of interpreting correctly the indistinct shadows thrown by soft organs, often deeply placed, is a very different matter to deciphering the sharp dense shadows projected by bony structures, and was not really practicable in the earlier days of radiography.

The indistinctness of the earlier medical skiagrams was mainly due to the long exposures required, to the fact that many of the internal organs are in more or less constant movement, and to the inevitable magnification of the image by the rays diverging from the anode. Of late, however, improvements in apparatus and methods have rendered the study of the thoracic and abdominal organ a comparatively simple matter. The three great advances are the instantaneous method, the orthodiagraph, and the use of the bismuth meal or enema.

The instantaneous method gives us shadow pictures of the internal organs which leave little or nothing to be desired from the point of view of clearness and definition, whilst the error due to magnification is very greatly reduced, owing to the greater distance of the tube from the body of the patient (40 to 50 in). Instantaneous radiography is destined to play a very great part in clinical medicine, not only for purposes of diagnosis, but by revealing to us information, which we have never yet possessed, about the shape and movements of the internal organs in the living subject. It has already raised important questions as to the shape and position of the normal stomach, and the manner in which it deals with its contents. It has added largely to our knowledge of the rate at which the intestinal contents move along different portions of that tube. It has shown us that an enema does not remain, as many have thought, in the lowest part of the large intestine, but travels back along the colon right up into the cæcum. It is not my intention, however, to discuss these matters to-day; I merely mention them to illustrate the great variety of new information which the instantaneous method is placing at our disposal. Time will show to what extent it is destined to modify accepted views.

The orthodiagraph is the most accurate radiosopic recording instrument we possess, and has the great advantage over all other methods of being able to register range of movement. In this instrument only the central pencil of rays from the anode is utilized. The instrument is so constructed that this central pencil can be carried round the margin of any shadow or object shown on the fluorescent screen, and its position dotted down at short intervals on a sheet of paper by means of an automatic pencil.

By devising a portable modification of this instrument my colleague, Mr. Cecil Lyster, has largely added to its usefulness by rendering it available at the bedside. We have now been using it for more than two years in the wards of the Middlesex Hospital, and I have no hesitation in saying that for accurate work it surpasses any other X-ray method at present available.

The instrument itself is before you. The fluorescent screen rests on a horizontal frame carried on a rigid pedestal, and can be raised or depressed at will. A fixed point is provided near the centre of the screen. Vertically below this fixed point is the centre of the anode of the fluorescent tube, and vertically below this again, so that it will write on the floor, an automatic pencil. The several parts of the instrument are mounted on a rigid iron stand which moves easily on castors in any direction. The patient is placed on a canvas stretcher, which can be passed under him like a draw-sheet with a minimum of disturbance, the poles of the stretcher being afterwards slid into position, and tension secured by iron cross-pieces at the head and feet. The stretcher is then lifted into a suitable position (either on trestles or between two beds), a piece of cartridge paper pinned to the floor beneath the patient, and the apparatus wheeled into position, so that the tube is placed close beneath the body of the patient, and the screen just above it. By using a fluoroscope patients can be examined in ordinary day-light. The dotted outline figures are obtained by moving the apparatus about in such a way as to carry the fixed point along the shadow margins projected on the screen, releasing the pencil at frequent intervals. As these pencil-marks indicate the point of impact on the paper of a series of vertical lines which touch the outer margin of the shadows seen on the screen, it follows that the figures obtained by joining them up into continuous lines reproduce the exact size and true relations of the organs under examination.

The chief merit of the portable orthodiagraph is that it permits of the investigation of cases of acute disease which, for obvious reasons, cannot be removed to a special department for examination. With this

instrument it has become possible to examine, among others, cases of widespread paralysis of the trunk and respiratory muscles, patients suffering from pericarditis, acute pleurisy, and even certain cases of pneumonia. With a little practice any one can learn to screen his own patients and appreciate any abnormalities in the shadow picture; but I am bound to add that a good deal of experience is necessary to enable one to record this picture accurately on paper. It is one thing to see the shadow of a moving structure, like the heart or diaphragm, but quite another to dot down accurately its position at any given moment; and for the present, at any rate, the making of ortho-diagrams is best left in the hands of experienced radiographers. But the practice of screening patients is one to be cultivated by all keen clinicians. It adds greatly to a true conception of the extent of disease, and is often of the greatest value in the diagnosis of a doubtful case.

The range of cases in which the X-rays may be employed in diagnosis is so great that the time at my disposal will only permit of my touching briefly on some of the more important among them.

Renal Diseases.—The value of radiography in this group is so well known that it need not detain us. Is there a surgeon who would to-day operate for stone in the kidney without having previously determined its presence by means of a skiagram? Although mainly used in the diagnosis of calculus, the X-rays also give us useful information as to the size of the kidneys, and may sometimes reveal the presence of an abscess in those organs.

Liver.—In abscess or hydatid cyst of this organ the most important information is generally to be gathered from the altered shape and movement of the diaphragm shadow on the right side. In the hands of an experienced observer the density of the shadow cast by the fluid in a hepatic cyst may give a clue as to its nature, for the shadow of hydatid fluid is distinctly denser than that of pus or serous fluid.

Affections of the Lungs and Mediastinum.—The value of the X-rays of aneurysm and mediastinal diseases is too well known to need more than a passing reference, but I should like to lay stress on the importance of obtaining a lateral and three-quarter view of the thorax in such cases. The omission to do this is likely to lead to an altogether erroneous impression as to the size and relations of any aneurysm or tumour. In this connection the following case is of interest: A youngish man was admitted to hospital a few weeks ago suffering from severe dyspnoea with loud stridor. Aneurysm was suspected, but the diagnosis could not be established by physical examination. Screening revealed a perfectly normal state of the mediastinum, but there was obvious

thickening and deepening of the main bronchial shadows on both sides. The patient was at once treated with large doses of iodide of potassium, on the supposition that the lesion was probably syphilitic, and made a rapid recovery.

In pulmonary tuberculosis I believe that instantaneous skiagrams will prove of value in two classes of cases: (1) to confirm the diagnosis of very early disease, and (2) to chart periodically the exact condition of the lungs in chronic cases. Nothing, to my mind, could convey such an accurate idea of the progress of chronic lesions.

The X-rays may prove of great value in the diagnosis of pleural conditions; they are particularly useful in locating the exact position of small empyemata and their distance from the surface of the body. The characters of the shadow in a doubtful pleural case often help to distinguish between effusion and pleural thickening; in the former, if recent, the edge of the shadow is sharp, whereas in chronic affections of the pleura the shadow margin is more or less blurred.

Affections of the Heart and Pericardium.—Radioscopy is of considerable use in investigating the general state of the heart and pericardium. It enables us to estimate with considerable accuracy the situation and extent of dilatation, and in a less degree the nature of the cardiac contraction—whether undulatory or not, and so forth; but for this latter purpose I do not think we can hope for much real assistance from this method of examination, at all events as far as the study of the finer movements are concerned. A week or two ago I screened a patient suffering from heart-block with Mr. Lyster. A tracing taken with a polygraph just before showed the auricular contractions to be twice as frequent as the ventricular. We were just able to convince ourselves that the rate of movement in the two regions was not the same, but it would have been impossible to establish the precise relation between the two. Had the X-ray examination come first I am not positive that we should have noticed anything abnormal.

In pericardial effusions screening at the bedside may be of assistance in the diagnosis of doubtful cases. The distinction from dilated heart rests chiefly on the shape of the shadow, which bulges outwards on both sides beyond the normal limits and shows no pulsation at the edges. My attention has been drawn to a point of some interest in connection with pericarditis—namely, the condition of the diaphragm as to movement. In two cases of pericardial effusion the diaphragm was motionless; on the left side only in an adult with a moderate effusion, on both sides in the case of a little girl with a very large

effusion. In the former the diaphragm was seen to resume healthy movement on the subsidence of acute symptoms. In common with my colleague, Dr. Wynter, I have taught for some time that absence of epigastric respiratory movement is a common sign of pericardial effusion. This, then, is fully accounted for by diaphragmatic inactivity, but there is a further point which is still under investigation—namely, whether the signs (dulness and bronchial breathing) sometimes present at the left base in cases of pericardial effusion, which have been attributed by some authorities to compression of the lung by the effusion, may not equally be accounted for by lobar collapse of the lung, which I have shown to occur as the result of cessation of diaphragmatic movement. In the discussion on pericardial effusion at the Royal Society of Medicine this hypothesis received a support which was as gratifying as it was unexpected. Dr. Charles Box and Mr. G. G. Butler, in their analysis of 110 fatal cases observed at St. Thomas' Hospital, mention that, "clinically, pneumonia was recognized in twenty cases. In thirteen of these the left lower lobe was the part involved—in ten alone, in three in conjunction with other parts. Massive collapse of the left lower lobe, *uncomplicated by pleural effusion*, occurred in four cases. The physical signs present were dulness near and below the lower angle of the left scapula, and tubular breath sounds in the same situation." We therefore know that massive collapse of the left lower lobe is occasionally the cause of the physical signs at the left base in pericardial effusion. The questions which still remain to be decided are whether arrest of diaphragmatic movement occurs in pericarditis without effusion, and whether it ever takes place in other affections of the heart. The answer to the latter question is, I believe, in the negative.

Affections of the Alimentary Canal.—The introduction of the bismuth meal and bismuth enema has opened a new era in the investigation of the condition of the alimentary canal. The negatives and photographs I have to show you speak for themselves. The mapping out of the whole of the large intestine by giving a bismuth enema is wonderful. No other method of examination can give us information in any way comparable to this. It reveals to us the shape, size, and position of practically any part of the alimentary canal. Incidentally it has shown that an enema travels back along the large intestine as far as the cæcum, an event which was far from being generally accepted. The shadow of the bismuth meal as it travels along the alimentary tube defines with perfect accuracy the situation and length of any stricture and the condition of the adjacent tube.

The use of this method of examination has already raised several questions of considerable interest—such as the shape of the normal

stomach, the normal position of the pylorus, and the rate of movement of the intestinal contents through the different parts of the canal. The facts revealed are by no means all in accord with previously held opinions, but, before accepting them as final, we must be fully satisfied that the differences observed are not in any degree attributable to the difference in bulk, nature, or density of a bismuth meal as compared with an ordinary mixed meal, or to the position of the patient.

The method is of value not only in the investigation of cases of stricture, but also in ascertaining in certain cases the conditions underlying chronic constipation.

I regret that the time at my disposal has not permitted of my doing more than to draw your attention in such a cursory manner to the wide range of conditions in which X-ray examination may prove of value in the diagnosis of medical affections.—*The Polyclinic*.

SURGERY.

Primary Diphtheria of External Urinary Meatus.

BY

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DIPHTHERIA affecting parts other than those forming the respiratory tract and the oral pharynx is not common. The following case illustrates an infection of the external urinary opening :—

The patient was a little girl 9 years of age. The attention of the child's mother was first drawn to the condition by the presence of a little blood on the child's underclothing. On further examination she discovered what she described as a "blood clot" in the front passage. On the same day I first saw the child. The "blood-clot" proved to be a purplish, angry-looking swelling, occupying the position of the external urinary meatus and its immediate neighbourhood, rounded in outline, reaching below the base of the hymen, and completely hiding the latter. Its general appearance was much like that of a limited, much-congested prolapse of the rectum. The centre of the swelling was depressed, and admitted with difficulty a small catheter. Urine was drawn off and showed nothing abnormal. Several small punched-out ulcers were to be seen around the margin of the depression. The whole surface exuded a thin blood-stained discharge. Nothing in the nature of a false membrane was seen. The inguinal glands were not enlarged. The swelling was tender to the touch; but there was no complaint of pain, even during or after micturition. The temperature was normal. No sickness or vomiting existed. There was no history of any local injury or previous disease.

The treatment adopted was rest in bed, a sedative lotion locally, and an alkaline mixture by the mouth.

By the fourth day there was no improvement, the swelling was greater and the ulceration deeper, now forming an irregular ring around the urethral opening.

I was impressed by the continued absence of pain, and the presence of only moderate tenderness, in a part normally so sensitive. I knew that generally, diphtheria of the tonsil, pure and simple, gives rise to little complaint on the part of children suffering from it. This suggested to my mind the possible presence of this disease.

A swab was taken, the culture examined at the Cardiff and County Public Health Laboratory, and diphtheria bacilli were found to be present. 2,000 units of antitoxin were immediately injected. A swab taken from the throat gave no bacilli on culture.

Forty-eight hours after the injection the swelling began to diminish, at the end of another eight days it had practically disappeared, and the ulceration had almost entirely healed. At this time the examination of a second swab gave a negative result.

Apart from slight redness of the part, which persisted for some time, the child showed no complications or sequelæ.

One or two features in the case seem to call for remark.

(1) *The Source and Localisation of the Infection.*—The throat, as already stated, showed no diphtheria bacilli, and appeared quite normal on inspection. There was no discharge from the nose or ear, and no sore on the face. A younger sister (the only other child in the house) was perfectly well. Neither had ever had diphtheria, nor had either of them been exposed to any known source of infection. The propensity of young children for playing with their genitals is very common, and the infection was probably conveyed in this fashion, from some unknown source.

Diphtheria of this region, secondary to lesion elsewhere, is rare in this country. Dr. Gee, in Allbutt's *System of Medicine*, states that "diphtheria of the vulva, vagina, anus, or prepuce, are diseases very uncommon in England."

In a fairly large experience of diphtheria under the Metropolitan Asylums Board, London, I can only recall one case of uro-genital diphtheria, in a female, and that was secondary to diphtheria of the tonsils. There was no membrane present, only deep injection and swelling, as in the present case.

In the United States of America, however, this secondary form is not so rare. Dr. McCollum states that "it is not an uncommon thing for a female child to carry the infection from the nose to the vulva."

But primary infection of this part appears to be universally rare, and, writing with only access to a limited number of works of reference, I have not found mention of a single case. Diphtheria of the penis is said to occur in the child; and in adults it has been mistaken for chancre, and has been followed by post-diphtheritic paralysis.

(2) *The Absence of Constitutional Symptoms.*—Marked febrile reaction and its concomitants are rare in an ordinary diphtheritic attack. When present there is a second infection with one or more of the pyogenic micro-organisms. The very number of "negatives" in the history and symptomatology may be useful, in doubtful cases, in suggesting the diagnosis. Of these, the absence of membrane is not the least important.

It is only right to add that cases of secondary vulvar diphtheria have been described as "frequently attended by marked constitutional disturbance, tenderness of abdomen, and painful micturition."

(3) *Absence of Pain and Presence of relatively little Tenderness.*—It is hardly conceivable that so much swelling as was present in this case, if due to any other infection, or if secondary to injury, could have produced so little local pain. The fact, however, is in keeping with the analgesic effects of the diphtheria toxins, both local and general.

This consideration deserves emphasis, as in so ubiquitous and insidious a disease, sparing no part or region, it may, as already suggested, point the way to finding the Klebs-Löffler bacillus, where otherwise there may be little or no ground for suspecting its presence.—*The Practitioner.*

Hints on General Anæsthesia.

By

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THE number of deaths that have occurred during the present year, and the knowledge that both in England and here there is an increase from deaths during operation or immediately following operation, in which there is a question as to their being influenced by the anæsthetic administered to the patient, impels me to record a few hints that may be of service, and to draw attention to some of the mistakes that have come under my own observation.

A remark was made recently at an inquest in Melbourne, "that inquests following deaths under anæsthesia or immediately following operations were not necessary and tended to cast a reflection upon the medical faculty." I respectfully differ from such remarks. We have to remember that we are dealing with human life and not that of sheep or cattle, and that any inquiry which can in any way help us when a death occurs under an anæsthetic should be sought for by both surgeon and anæsthetist. I do not ask for a public enquiry. I think that possibly such an enquiry may do more harm than good, but that a full and earnest search after the true cause of death should be made.

Within the past twelve months a committee appointed in England to enquire into the administration of anæsthetics recorded with regret the increasing number of deaths under anæsthesia, and made the following recommendation, amongst others:—Every death under an anæsthetic should be reported to the coroner, who, after enquiry, should determine whether it is desirable to hold an inquest or not.

In making enquiries as to the cause of death, the condition of the patient and the mode of administering the anæsthetic from start to finish should be minutely detailed. It is of the utmost importance that full particulars should be ascertained, for a patient may take one method with safety on one occasion that might be highly dangerous on another. For example, take a patient in a fairly satisfactory state of general health who requires, say a resection of the bowel; this is done under closed ethyl chloride and ether (Clover), the patient stands the operation well; a few days later a stitch gives way and there is leakage into the general peritoneal cavity, and general peritonitis follows with a toxic condition invading the whole system; a second operation is found necessary, the patient is now in a low state of health, the same method of anæsthesia is employed at the start, with the result that the heart is embarrassed by the strain thrown on to it by the sudden throwing into the system of a concentrated dose of ethyl chloride, which we must remember is a very powerful anæsthetic. The primary effects of ethyl chloride is to stimulate the heart and cause cerebral congestion, but if the heart is enfeebled it would not be able to stand any sudden shock thrown on it as in the closed method of administration, but would be able to withstand the more gradual entrance of ethyl chloride into the system as in the open method. In this case the drug can be regulated in the amount given, and is moreover accompanied by the free admixture of air, as opposed to CO₂, and the poisonous products of the patient's breath, which tend to rapidly run up the blood pressure and throw an

extra and sudden strain on an enfeebled heart. In the one case it resembles giving a man a quiet push over his heart which would do him no harm, in the other it is like throwing the whole force of a well directed blow on to the heart, which might very easily knock the man out; the same arm administers each stroke but the force behind is very different.

I have seen a patient in a low state of health put off with closed ethyl chloride and ether (Clover), and then when the anaesthetist saw from the cyanosis of patient and generally embarrassed respiration that something was wrong, he has gone on to open ether, but the patient has collapsed and he has wondered why. The reason was not far to seek, the harm was done in the shock given to a feeble heart in a subject suffering from a toxic condition, by the throwing against it a concentrated dose of a very powerful anaesthetic. Ethyl chloride can be given in practically all cases and in all conditions if properly handled by the open mask or on an open towel, but the material used on the mask is of the *greatest importance*; it must be of an open nature so as to allow free circulation of air *through it* and free evaporation. I am now nearing my 1800th cases of open ethyl chloride and open ether administration. They have been of all conditions and ages, but in no single case has either artificial respiration been required or the oxygen cylinder called for. What has been most marked is the absence of shock, and in the case of patients suffering from shock when placed on the operating table, as in some of the Richmond Railway accident cases, or in those in a very low condition, as in some of the amputations through the thigh done recently in the Melbourne Hospital, there has been very marked and distinct improvement in the blood pressure and general condition of the patient, with absence of shock afterwards; this was especially the case with a very feeble woman of 53 years whose left leg required amputating just below the knee for diabetic gangrene. When placed on the table this patient was in a very low state indeed, but under open ethyl chloride and open ether there was a distinct improvement in blood pressure, and no shock followed the operation. I have not yet met the case that cannot have open ethyl chloride and open ether administered to it with advantage; in England and America open ether is gaining ground every day as a form of anaesthetic that maintains the patient in a condition most nearly approaching *normal*. The rushing up of blood pressure, as in the closed method of administration, is not an advantage to the patient in any way. When at school there was a saying that "what goes up must come down;" the same applies to the rushing up of blood pressure; it creates an abnormal physiological condition that

cannot be justified. Open ether maintains the blood pressure about normal or slightly above it, for almost any length of time, if administered so that the patient has along with his ether a free supply of air. He must breathe *through* a mask of a fairly open material, and not round or under it—the mask must fit the patient's face. Lint is, in my opinion, not a good material to use, especially if more than one layer in thickness; it is of too close a texture, soon becomes sodden with condensation of the patient's breath, which forms a barrier of moisture between the patient and the anaesthetic, so that there is *not* free evaporation of the ether, and the patient shows signs of coming to. To get over this, the anaesthetist pours on more ether, thus saturating his mask, a very bad thing to do, for the excess of ether still further prevents free evaporation; his next step is to place a few drops of chloroform on mask, and then a few more, and again a few more; the heavy chloroform vapour filters through mask, the heavy sodden nature of the lint shuts it in, and very soon we have a more than 2 per cent. chloroform vapour being inhaled by the patient, and there is once more a case of collapse, oxygen and artificial respiration.

It is well for young anaesthetists to remember that rigidity in a patient, or incomplete muscular relaxation, does not necessarily mean that the patient is not fully anaesthetised. A patient may be deeply under the effects of an anaesthetic and yet be not properly relaxed. This is due to *asphyxiation*, brought about possibly by using a Clover inhaler and not handling it properly, or concentrated ether vapour irritating the air-passages and causing swelling of the passages or increased flow of mucous blocking the passages; or the fault may not lie with the anaesthetist at all, but with the surgeon; and it is well for surgeons to remember this. I have seen a woman of fat nature who required operating on for pelvic trouble, and in whom there had been a general peritonitis, placed on an operating table, and whose pelvis was raised to close on an angle of 45°; no shoulder rests had been used to support patient, because one was broken, and the nurse thought it not worth while to put in the other, so that in order to prevent patient from sliding off the table the anaesthetist had to raise up the head end of the table to form a rest and take some of the body weight, with the result that the neck, in a fat woman, was bent at an angle and still further obstructed her air passages, which in all fat people have a tendency towards swelling and preventing free supply of air to lungs, thus bringing about asphyxiation and more mucous and more obstruction and rigidity. This very high elevation of the pelvis is unnecessary with a surgeon who handles his packs properly in abdominal operations, and

does him and the patient no good. A thin patient can stand a fairly high elevation of the pelvis without harm resulting, but in the case of a fat patient it is more likely to embarrass the surgeon by causing congestion and asphyxiation, with the resulting rigidity, than anything else. He then turns on his anaesthetist, when the fault is mainly his own. If the anaesthetist is not fully up in his work he is apt to think the patient not properly under, and in order to oblige the surgeon starts administering chloroform. After a short time there is again collapse, and a call for oxygen and artificial respiration. No anaesthetist should pass from *ether to chloroform* without first seeing that he has a good corneal reflex. It is best, if possible, to always retain a corneal reflex and a medium pupil that reacts to light. A man who avoids these little details is apt to get into serious trouble. An anaesthetist should always remember that his primary duty is towards his patient, and that by carrying out that duty he fulfils his duty towards the surgeon by keeping the patient in the best possible condition for and during operating, and also places the patient off the table after the operation in the best condition for a rapid recovery and avoidance of after-effects.

The administration of an anaesthetic does not consist in placing a Clover inhaler on a patient's face and putting the patient under, little else being required. The method of administration should be made as pleasant to the patient as possible, and I hope soon to see the Clover inhaler looked upon as "a relic of a barbaric age," and placed in our medical school museums.

One more word to surgeons. I have seen patients on the operating table in a state of what I consider almost criminal anaesthesia, with widely dilated, immobile pupils, cheeks of a whitish hue with a bluish tinge showing through them, and lips of a dirty blue colour—the patient, in fact, on the verge of death—and when I have remonstrated and told the anaesthetist he had better be careful and carry on with open ether, been told that the surgeon had said it was impossible for the patient to be properly under with open ether, and he always wanted chloroform for his abdominal work. No surgeon has any right to require or ask that any patient should be placed under such a grave risk of anaesthesia as this, and no anaesthetist who has the best interests of his patient at heart would do it. It is a very common remark amongst some surgeons in this country that open ether does not do for abdominal work. This is quite contrary to all experience in America, England, and here. At the Women's Hospital the majority of cases are done under open ether, and males can be handled in the same way if the head is kept raised at the onset of anaesthesia, and gradually lowered if necessary after the patient

has been put under. Any class of case can be put under with open ethyl chloride and ether, and the state of anaesthesia regulated if necessary by chloroform; but as mentioned before, the mask must be of an open nature, fit well, and the patient breathe *through* it. Of the different masks, Murray's is the best, and fits nearly all cases. Should it not fit, then use a towel of open character, fairly heavy in material, but in which you can see light freely through it on holding it up to the window. The putting of a patient under first with the Clover inhaler and then going on with open ether is a method that personally I do not approve of—firstly because the Clover is very often distasteful to the patient, an important point, and, secondly, because if ethyl chloride is used there is a too sudden shock to the heart by such a powerful anaesthetic being thrown into the system all at once. In 999 cases out of 1,000 it may be all right, and the heart can stand it, but in the thousandth case the heart cannot.

In patients put under with open ethyl chloride and open ether, there is a very marked absence of post-operative vomiting. It is very exceptional for the patient to vomit more than once; a large majority do not vomit at all. No case have I seen in which the vomiting has been at all troublesome. There is almost complete absence of any irritating mucous secretion, especially so if the closed method of putting the patient under and following with open ether has been avoided. Patients that get broncho-pneumonia under the closed method of ether administration can take the open ether without any irritation of the lungs. I have had nine cases in which patients who had been operated on and a Clover used, with broncho-pneumonia following, for their second operations had open ethyl chloride and open ether without trace of trouble. In only one case have I seen anything of irritation, and that in a Hindu, who I found out afterwards had bronchitis at the time of operation. The absence of lung irritation is, I think, due to the fact that the patient does not breathe concentrated ether vapour coupled with CO₂, and the re-breathing the poisonous products of his own respiration, but breathes a more diluted ether vapour plus air. I personally do not think it is the actual ether that causes all the trouble. Should the anaesthetist wish to concentrate his ether a little on the patient, especially in the more early stages, I always have with me a light linen towel, and with my hand holding the Murray's mask I throw the towel over mask and hand so that the ether vapour is concentrated a little, but there is still plenty of air going to patient. There is another point in open ether work. The head can be kept raised if necessary without any disadvantage—in fact, with great advantage—in full-blooded alcoholic cases. I never use

morphia and atropine for my cases, because I do not like to interfere in any way with the actions of the iris. Some men do, and claim advantage for it; personally, I have found the open ether method so good and the condition of patient all that one could wish, even in the longest and severest operations, that I avoid anything that will interfere with the normal. By this I do not mean that those who use morphia and atropine may not be doing what is really best in many cases.

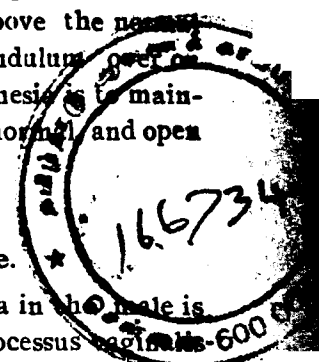
The material with which a Murray's mask should be covered is either a layer of flannel of an open nature or one layer of domette or Turkish towelling. The mask should be kept moist with ether, but not over-saturated, as I see very often done. Ether will not evaporate freely on a saturated mask. Chloroform can be used if necessary in small quantities, but the more expert the anæsthetist becomes the less will he require his chloroform bottle. In using chloroform on a mask of the nature specified above and not of lint, there is considerably less risk of a dangerous two per cent. mixture or more of chloroform being given to patient. The recovery from the anæsthetic, even after a very long operation, is rapid, and no after-taste of ether is left. The Schimmelbusch mask is, I think, not a very good one to use, as it never fits the patient's face closely, and always requires a face-pad for open ether work. Some objectors to open ether work say that there must be a greater tendency to broncho-pneumonia by this method. This is quite contrary to experience, and the more open the mask the less that tendency. An open mask allows the patient to receive his ether plus air without irritation of the lungs and air passages, and, as stated before, the ether itself has, I think, very little to do with the broncho-pneumonia; it is the CO₂ plus concentrated ether, plus re-breathing poisonous products of one's own respiration that irritate the air-passages. Headache and feelings of fulness in the head are much less common after open ether than the closed method. Nearly every member of the medical profession, if told by a patient that he wakes up every morning feeling tired, with an unclean tongue and a heavy head, will ask that patient: How many people sleep in the same room, is the room well ventilated, and does he sleep with the windows open? Should he say that more than one person sleeps in that room, that it is not well ventilated and the windows not open, the medical man will remark: "My dear sir, how can you expect to wake up feeling fit under such conditions; you have been using up all the oxygen in the room and poisoning the air with your own products of respiration and re-breathing that vitiated atmosphere." And yet the same man will keep his patient under by a closed method of anæsthetic, talk

about raising blood-pressure, and say it is good for the patient. That cry so often heard that the raising of blood-pressure above the normal is good is contrary to all common sense; throw the pendulum over on one side, it will rebound on the other. The ideal anæsthesia is to maintain the patient in a condition most nearly approaching normal, and open ether does it.—*The Australasian Medical Gazette.*

Gonorrhœal Peritonitis in a Male.

BODENSTEIN.—Peritonitis as a result of gonorrhœa in the male is extremely rare. Predisposing causes may be a patent processus vaginalis or cryptorchidism. The peritoneum may be involved by direct extension from the prostate gland, vesiculæ seminales, or the ampullary end of the vas deferens, or indirectly through the blood or lymphatics. Horowitz and Zeissl claim that infection may travel by the spermatic plexus which ascends in the inguinal canal behind the peritoneum. In gonorrhœal epididymitis the lymphatics of the vas deferens may become infected. Zeissl and Horowitz described a vessel which accompanied the vas deferens to the base of the bladder and then passed behind the peritoneum to the posterior wall of the true pelvis. In the following case peritonitis followed the injection of a $\frac{1}{2}$ per cent. solution of silver nitrate by Guyon's method.

A healthy man aged 22, had acute gonorrhœa. The first portion of urine passed was turbid; the second was clear. After a fortnight's treatment by injections of novargan and albargin he was given the injection by Guyon's method of nitrate of silver. At the time there were no symptoms of posterior urethritis. In the evening there was slight abdominal discomfort and pain. On the following morning he was more comfortable but in the evening he was suddenly seized with nausea and slight pyrexia. Per rectum a sausage-shaped swelling was felt to the right of the prostate gland. The abdomen was tender and the walls were rigid. There was gurgling on pressure in the right iliac fossa. The temperature was 100.4° and the pulse was 100. Appendicitis was suspected and laparotomy was immediately performed. The peritoneal cavity contained a large quantity of clear, serous fluid. The intestines and appendix were normal, but the latter was removed. A week later the wound had healed and there was nothing abnormal to be felt per rectum. About a month later the gonorrhœa was cured. He was examined six months later and found in excellent health. The prostate gland and vesiculæ seminales were normal and the prostatic secretion contained no gonococci.



The writer believes that at the time of the Guyon's injection some silver nitrate solution, with or without gonococci, was aspirated by anti-peristaltic movements of the vas deferens into the right vesicula seminalis and there produced vesiculitis, through which the peritoneum became implicated. Whether the peritonitis was due to gonococci or the chemical irritation of the silver nitrate cannot be decided in the absence of a bacteriological examination of the peritoneal effusion.—*The Medical Review.*

OPHTHALMOLOGY.

A Report of Six Cases of Crescentic Ulceration of the Cornea, with Comments on the Value of Peroxide of Hydrogen in their Treatment.

BY

J. F. SHOEMAKER, M. D.

ST. LOUIS, MO.

John Dunn reports six cases of crescentic ulceration of the cornea treated by him during the past year. The ordinary treatment of such cases, including the application of iodine, actual cautery, subconjunctival injections, etc., failing to check the progress of the disease, he conceived the idea of applying peroxide of hydrogen to the ulcer after rubbing the surface of the ulcer with a cotton-wrapped probe. He did this and then discovered why the remedies had not checked the disease. Immediately after the application of the peroxide "the hydrogen bubbles spread over the surface of the ulcer and into the layers of the cornea to a considerable distance beyond the apparent ulceration, forming therein a white area of small bubbles." This showed distinctly that the infection had spread beneath the corneal epithelium quite a distance beyond the ulceration and hence was not destroyed by the cautery. The application of iodine to this entire area checked the further progress of the disease and the ulcer healed rapidly thereafter as any non-infected ulcer wound. After the first application of the peroxide of hydrogen there were no bubbles formed beneath the epithelium with repeated applications of the peroxide, demonstrating that the disease progressed no further after the first application. He used this treatment on the last three cases reported and it checked the progress of the disease at once in all three of them. The peculiarities common in all these cases were as follows: (1) The inflammation began as minute areas of infection near the corneal periphery, generally at or about the end of the vertical or horizontal meridians; (2) the infection was, at the start,

beneath Boman's membrane; (3) there was a little conjunctival irritation and no marked secretion; (4) after two or three days, if left untreated, minute cloudy areas could, under a magnifying glass, be seen near the original focus; (5) the ulceration spread centrally and peripherally; (6) it seemed averse to spreading centrally, so as to occupy more than one-third or two-fifths of the corneal surface; (7) it spared Descemet's membrane for a long time; (8) it was accompanied by hypopyon only once; (9) in one case under observation at the same time with the above six, but in the practice of another physician, the ulceration extended peripherally around the entire cornea. It extended centrally, however, no farther than the limits above given. In this case it was bilateral; (10) the ulceration was obstinate to all forms of treatment until the peroxide of hydrogen had been used; (11) the corneal substance rapidly regenerated after the infectiousness of the ulceration had been stopped, although there was left an amount of astigmatism proportionate in a general way to the extent of ulceration; (12) dionin hastened the disappearance of the cloudiness after repair had set in.

Dunn's method of treating these cases is to cocainize the eye well, then with a bit of cotton wrapped about a small probe rub firmly the surface over and in the neighbourhood of the ulcer. Then touch it with the peroxide of hydrogen, full strength, on a cotton wrapped probe. There need be no effort made to remove the bubbles beneath the corneal epithelium as they disappear of themselves in a short time. Atropin is used twice daily and a boric-acid salve applied every hour. Cold applications are applied unless contraindicated. The peroxide should be used once or twice daily until the ulcer has well started to healing. Such remedies as iodine, the cautery, etc., may be used in addition if necessary, but he believes in many cases it will not be necessary.—*The American Journal of Ophthalmology.*

OBSTETRICS AND GYNÆCOLOGY.

An Unconscious Pregnancy and Labour.

Dr. FIERERA CABRERA has published the following interesting case.—The patient, a woman of twenty-three, married for three years and suckling a child born eleven months after marriage, was suddenly taken ill in the middle of the night with pain in the lower abdomen of a colicky nature, which no treatment could relieve. A doctor called in a few hours later found the abdomen hard and containing a tumour of fairly large proportions. Thinking that the colicky pains were due to indigestion he ordered enemata, massage, soothing applications, and

finally, as none of these had much effect, a draught containing opium and potassium bromide. Even this last proved of no avail in checking the pains, which only increased in severity, until finally, after a strong expulsive effort, the well formed head of a child appeared at the vulva. Mother and father alike could hardly believe their senses, so unexpected was the result. The mother declared that but for the fact that she saw the child she could not have believed that it was hers, for she never had any suspicion that she was pregnant. Leaving on one side the comical aspect of this case, the author attempts to explain how it was that the mother was unaware of her condition. It is, of course, true that her amenorrhœa did not strike her as extraordinary in view of the fact that she was nursing her first child: and again, being naturally inclined to corpulency, she put down her increase in abdominal girth to an aggravation of her tendency. The movements of the foetus she must have mistaken for flatulence. A number of cases of this kind have been reported by various observers, including Desgranges, Duquesnel, Fodere Vogel, Klein, and Brouardel, in which no pathological cause could be found to account for this condition of ignorance. It would thus seem an established fact that a woman may be pregnant without knowing it, and may enter into labour when thinking she is the subject of severe colic—facts which, from a medicolegal point of view, are of great interest.—*The Hospital*.

Delayed Menopause: its Dangers and Therapeutic Indications.

Presenting a Table of the Approximate Age at which, in Women Free from Pelvic Diseases, Disorder, or Displacement, the Menopause should be Established.*

BY

A. ERNEST GALLANT, M.D., NEW YORK.

THE cessation of menstruation in the wholly healthy woman should occur abruptly, at an age-ratio dependent on the age menstruation commenced: late, if begun early, and early if begun late. So few women who are free from symptoms and apparently healthy at the time of the menopause apply for examination that accurate data on which to base the real normal relation of the beginning and end of the menses are extremely difficult to secure. We have therefore worked out the following table of "Approximate Ages" as a *practical working schedule* upon which to estimate the probable date of the menopause, as the age limit beyond which no woman should be allowed to go on menstruating without a thorough examination:—

* Abstract of paper read at the Eleventh Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5, 6 and 7, 1910.

APPROXIMATE AGE OF MENOPAUSE.

Menses begun at 10th year: should cease between 50—52nd years.						
"	"	"	11th	"	"	48—50th "
"	"	"	12th	"	"	46—48th "
"	"	"	13th	"	"	44—46th "
"	"	"	14th	"	"	42—44th "
"	"	"	15th	"	"	40—42d "
"	"	"	16th	"	"	38—40th "
"	"	"	17th	"	"	36—38th "
"	"	"	18th	"	"	34—36th "
"	"	"	19th	"	"	32—34th "
"	"	"	20th	"	"	30—32d "

These figures are intended to represent the age-limit in healthy women only, and vary widely from the averages collected by E. Krieger, which include all classes of women, regardless of general or pelvic disease.

Among 3,700 patients seen by the writer in the gynæcological departments of the Roosevelt Hospital, O. P. D., and the Northern Dispensary, there were 278 who had reached or passed the menopause, and, of these, 154 could recall their ages when menstruation began and ended. Of the latter number, in 73, or 48 per cent., the menopause had been delayed beyond the "approximate age," including

3 cases of carcinoma uteri, an average of.....	7.0 years.
17 cases of flexion, version or fixation, an average of.....	6.5 years.
15 cases of prolapsed uterus, vagina and bladder, an average of..	6.2 years.
4 cases of late recurrence, an average of.....	10.75 years.
39 cases, a total of 266 years, or an average of.....	7.00 years.

Of the same 3,700 women, there were 484 over 35 years of age, 150 having passed the "approximate age" by a total of 837 years, or an average of 5.6 years, who were subject to one or another form of atypical menstruation amply justifying them in seeking relief from the burden of delayed menopause.

The menopause is "delayed" whenever menstruation is continued after the "approximate age," and this is always associated with uterine flexion, version, fixation, neoplasm, tubal disease, or syphilis, etc.

The *danger signals* in delayed menopause are: (a) atypical hæmorrhage; (b) discharge; (c) pain; signals which, if disregarded, lead to disaster and death. The first case cited was that of a woman 40 years old, with cancer of the uterus, too far advanced to permit of radical operation. The symptoms were greatly relieved by the local application of acetone, and she died one year after coming under observation. The application of this agent, in incurable cases, to the excavated cer-

vix, or after scraping away the cauliflower mass, as suggested by Gellhorn, Dr. Gallant said, had the effect of controlling the bleeding, the offensive discharge, and obtunding the pain to a remarkable degree. It also inhibits the growth, even though the fatal issue of the disease cannot be prevented.

The Dangers Incident to Delay.—1. Delay on the part of the patient in consulting a physician. Many women, through ignorance, false modesty, fear of examination, fear of learning the truth, or a wish to hide their condition from others, postpone this until too late.

CASE 2.—Mrs. McC., 53 years. Carcinoma of the uterus and anterior vaginal wall. The cervix a cone-shaped shell, excavated by the degeneration of the growth. Has had hæmorrhage and discharge for a long time. Of this variety of incurable cases he has met with about one hundred; some, naturally, varying in that the vagina was filled with a cauliform growth, and the rectum, bladder and vulva more or less involved; but all hopeless so far as any real curative treatment was concerned.

2. Delay due to absence of urgent symptoms:—

CASE 3.—Mrs. C. R., 42 years. Malignant ovarian cystoma. Menopause two years delayed. For the past three months her abdomen has rapidly grown larger. Backache when lying; pain on the right and center of abdomen; weight diminished from 175 to 140 pounds. Firm tumor reaching nearly to the umbilicus, on the left; uterus small and pushed against the symphysis to the right. Operation. Prognosis unfavorable.

3. Delaying examination. Not infrequently the gravity of the situation has not been appreciated by the physician, who temporizes and permits a malignant growth to advance to a dangerous degree, thereby lessening the chances of a cure.

CASE 4.—Mrs. M. E. L., 68 years. Medullary carcinoma of the uterus. Abdominal hysterectomy. Menses did not cease until some time after her fiftieth year. Backache and flowing off and on, with discharge since September 25, 1909. Up to February, 1910, no examination per vagina had been made by the physician attending her up to that time. Operation, February 23, 1910. What is the prognosis in a woman of 68 years? And how much more favourable, had the uterus been removed some months or years earlier?

4. Delay through failure to make correct diagnosis, leading to minor operation, where radical extirpation was imperatively indicated:—

CASE 5.—Mrs. H., 42 years. Carcinoma of the body of the uterus. Vaginal removal of uterus and right (cystic) ovary. Menopause delayed four years. On account of excessive, irregular flow, her physician, two months ago, curetted the uterus and repaired a lacerated cervix. Six weeks later the flow recurred and has continued, off and on, for the past six weeks. Backache, not relieved by pessary; has lost flesh and strength and usual activity. While this patient is now in good health, how much better and safer it would have been had she been examined at the approximate age and the enlarged, retroverted uterus removed.

5. Delay due to refusal of the patient to follow advice:—

CASE 6.—Mrs. M. B. Operation postponed thirteen years. She died something over a year after abdominal hysterectomy, having suffered all the tortures of malignant disease and vesicovaginal fistula. The floor of the bladder was infiltrated and it was accidentally perforated during the operation; attempted closure failed.

6. Delay due to the delusion that atrophy of a fibroid uterus will occur after the menopause:—

CASE 7.—Miss B. E. S., 45 years. Large fibroid uterus; excessive debility and anæmia from hæmorrhage. Abdominal hysterectomy. If the operation had been done earlier she would have been saved six months' or more loss of time, to say nothing of much mental and physical suffering.

7. Delaying operation for fibroma results in severe oligocyœmia and oligochromœmia, which seriously handicap the patient for subsequent hysterectomy, even in those who have not attained the approximate age.

CASE 8.—Mrs. R., 33 years. For four months had been losing an excessive amount of blood, notwithstanding the administration of hæmostatic drugs to the limit of ergotism. The fibroid uterus was removed by abdomino-vaginal hysterectomy, and she succumbed two days later; a victim to her own wilful delay.

8. Delaying the removal of fibroma results in malignant degeneration of the growth:—

CASE 9.—Mrs. C., 55 years. Abdomen distended by a fluctuating tumor especially prominent on the right side, and which projects downward, filling the whole pelvic cavity. The temperature (101° F.) obscured the diagnosis and led him to evacuate through the vagina. More than a quart of debris consisting of disintegrated fibroid, clots and fluid escaped, followed by collapse of the tumor. The small uterus lay toward the left. In spite of rubber-tube and gauze drainage the tumor

rapidly enlarged, and eight weeks later the mass was removed by coeliotomy. Some of the gelatinous material must, however, have entered the peritoneal cavity, which again refilled, and she died in less than a month. Pathologists' report—sarcoma.

In cases of cervical or uterine polypi, which are not infrequently met with in delayed menopause, hysterectomy would scarcely be indicated, though at times polypi appear to be the forebears of malignant disease. When examining women, one must not mistake the bleeding coming from a urethral carbuncle, anal fissure, or internal hemorrhoids, which possibly may suggest neoplasm.

9. Delayed menopause is most frequently due to or associated with *uterine obstruction*. At the meeting of the society last year, Dr. Gallant, by an analysis of 185 cases, had endeavoured to show the importance of chronic obstruction to the uterine outflow, menstrual, and inter-menstrual, and the manifold serious consequences which might result from this, and he now reiterated his positive conviction that every menstruating woman, at whatever age, can be, is entitled to be, and ought to be promptly treated for all menstrual irregularities, pelvic pains, back-ache, headache, etc., not only for the relief of these distressing symptoms, but as a means of "heading off" the more serious danger, the development of benign or malignant neoplasms.

Prophylaxis.—At the approximate age the woman has reached the limit of fecundity; therefore the *prophylactic removal* of a useless, and probably dangerous, tumor-breeding organ is wholly justifiable, and the one sure method of putting an end to all the dangers.

Prophylactic hysterectomy for hereditary cancer of the uterus:—

CASE 10.—Mrs. K. K., 38 years; five living children. Has suffered from very excessive flow for twelve years. The large, heavy uterus was held firmly in the hollow of the sacrum, and could not be replaced bimanually. Owing to the fact that her mother and grandmother had both died of cancer, one at 65 and the other at 45, it seemed to him that to allow this uterus to remain would be to jeopardize, unnecessarily and unjustifiably, a life so valuable and necessary to her five living children. It was therefore removed by the vaginal route, on May 17, 1905, and the patient is now healthy and very happy because the danger has been averted.

Having related a case in which prophylactic hysterectomy was done for external prolapse of the uterus and bladder, and one in which this was done for excessive hæmorrhage due to syphilis, Dr. Gallant gave a summary of the various points treated of in the paper, concluding with

the following: The large number of incurable cases met with of carcinoma uteri, degenerated fibroids, and malignant ovarian and broad ligament cystoma, which sometimes develop as early as the twenty-fourth year, shows the necessity of instructing mothers to warn their daughters of the dangers of delay whenever they suffer from dysmenorrhœa, menorrhagia, metrorrhagia, leucorrhœa, abdominal tumors, etc., especially after they have passed the approximate age.—*Monthly Cyclopædia and Medical Bulletin*.

OTOLOGY AND LARYNGOLOGY.

A Simple and Efficient Method of Removing Tonsils.

BY

DOUGLAS J. GUTHRIE, M.D. (EDIN.)

THERE is probably no operation more frequently undertaken by the general practitioner than the removal of enlarged tonsils, and none when properly performed gives such excellent results. But it is not by any means an uncommon experience to meet with cases in which the manipulations have been imperfectly carried out, so that the patient is not benefited. Doubtless it is partly on this account that within recent times enucleation, that is to say removal of the entire tonsil in its surrounding capsule, has been strongly advocated by some as the operation of choice. Like all new forms of treatment it may run the risk of being employed to the exclusion of older methods, unless we bear in mind that it has its limitations as well as its uses.

Whilst it is unlikely that enucleation, in preference to the ordinary tonsillotomy, will ever become the routine method of dealing with enlarged tonsils, it is undoubtedly the best treatment for certain selected cases. In adults, coming under our notice as they so often do on account of constantly recurring quinsy, anything short of total removal of the area of infection must be regarded as unsound in principle, and this is borne out by the fact that we not infrequently find quinsies in persons whose tonsils have already been partly removed in the usual way. Hence it might almost be laid down as a general working rule that if the patient be an adult enucleation is to be preferred, the tonsil being so often the seat of disease, rather than mere hypertrophy, in such cases. Enucleation is superior to the slower and more laborious mode of reducing the tissue by means of punch forceps and cautery, although this treatment may suggest itself as an alternative, should time be no object to the patient.

With children the case is different; one is often called upon to remove tonsils with or without co-existent adenoids, merely on account of the obstruction to breathing and alteration of the voice caused thereby, and complete removal is consequently not essential. But when it is certain that the tonsil is diseased, as when it constitutes a source of lymphatic gland infection, or gives rise to septic sore throat at frequent intervals, enucleation is the correct treatment. Further, enucleation is the only method for those cases in which the affected tonsil projects little, if at all, beyond the pillars of the fauces, the so-called flat or sessile tonsil.

Passing to the technique of the operation, there are several facts which must ever be borne in mind if success is to be attained. And first of all it may be said that there is no tonsil which the guillotine, properly employed, will fail to remove. Various ways of enucleating have been recommended, and special instruments constructed for dissecting the tonsil out of its bed, but the guillotine method is simplicity itself, and involves no elaborate dissection. A Mackenzie's or a Heath's instrument will be found most useful, the two essentials being that it need possess no fork and, what is of much greater importance, the size of the ring should be slightly smaller than the tonsil we are about to remove. Inattention to this point is the chief source of failure to effect a complete excision of the tonsil. I have found guillotine No. 1 or No. 2 most serviceable; No. 3 is occasionally required, No. 4 seldom or never.

The operation is performed under local or general anaesthesia. It is much easier of execution when a local anaesthetic is used, but if, as in case of children, unconsciousness is essential, chloroform or A.C.E. should be employed. Ethyl chloride does not allow sufficient time for a satisfactory enucleation. As a preliminary step the tonsils should, if necessary, be freed from the anterior pillar by a few touches of the scalpel. It is then firmly grasped by vulsellum forceps, which have been introduced through the ring of the guillotine. The ring is next passed over the tonsil and pressed firmly outwards, the vulsellum in the operator's left hand pulling the tonsil forcibly inwards, whilst the blade of the guillotine is driven home. As division is effected, both the vulsellum and the shaft of the guillotine should be directed towards the tonsil from the opposite angle of the mouth. Particular care should be taken to remove the lower pole of the tonsil, a part hidden from view and hence liable to be left behind. In many cases it will be found easier to grasp the tonsil after engaging it in the ring of the guillotine, whilst for this

purpose one or other of the specially devised tonsil forceps may be used. If the manipulations have been carefully carried out, always under the direct guidance of the eye, it will be found that the tonsil has been removed in its capsule, leaving behind a smooth walled cavity, from which hæmorrhage rarely takes place, and whose raw surface granulates and heals very rapidly. Hæmorrhage of any severity is much less frequent than in tonsillotomy. Confinement to bed is unnecessary, and the patient may in many instances return to work on the following day.—*The Hospital.*

PREVENTIVE MEDICINE.

"Typhoid Fever."*

BY

G. RAMAN PILLAI, M.B., CH.B. (EDIN.)

The prevalence of Typhoid Fever in any community may be taken as an index of the sanitary intelligence of that community. "Sanitation" is not a subject that may be left entirely into the hands of a body appointed for that purpose; it should rather begin at our homes, the very springs of dirt and disease. Hercules himself (of Ægean stables fame), were he living, and made Health Officer, would find it no easy task to eradicate disease when the very springs of disease are out of his reach, and the weapons he has in hand are limited. Each man and woman of us must be so educated as to be his or her own Officer of Health. The masses must be made familiar with the principles and details of personal and domestic hygiene before a Public Officer of Health can show a record of results demanded by the progress of Science.

Peace has her enemies more notorious than war. Our Safety lies in opening the eyes of unsuspecting Ignorance to the dangers she is exposed from those enemies of health that lie hidden in her immediate vicinity.

A "Fever" is usually due to some poison circulating in the blood. Typhoid fever is caused by the presence in the blood of typhoid bacilli and of their poisons. By "Typhoid Fever" is meant a fever in the course of which the sufferer passes through what is known as the "typhoid" state—a condition in which there is great mental and physical prostration, short of actual coma. "Enteric Fever" is another name for the same, meaning, the fever in which the chief seat of the causative bacilli

* A lecture delivered at the Madras Corporation offices to the Sanitary Inspectors of Madras.

is in the intestines, where ulcers are produced. As the intestines are, in most cases, the chief seat of the bacilli, it would follow that the infection enters the bowels *via* the mouth, and, that any discharge from that excretory canal is bound to be infested with the bacilli, quite a small number of which is sufficient to hand over the disease to another body. And once the bacilli have entered the blood stream, it may be expected to be mixed up with other discharges of the body, notably the urine.

The *Bacillus* of Typhoid Fever:—This, of course, is visible only under powerful magnification. Still, a belief in their existence is absolutely essential, even when they cannot be pointed out with the naked-eye. If you can believe a cur in the streets to carry on its fur thousands of small insects like the flea that can only be made visible by straining our vision and approximating it to the loathsome creature, why then, it requires only a greater stretch of the imagination to convince ourselves of the possibilities of the presence of invisible particles of foreign matter in the water we drink, in the food we eat, and the dust that necessarily goes into our lungs while we breathe. We should endeavour to create into the minds of the deluded laity, a dread of infectious germs lurking unseen in the very articles of our daily use that are our necessities at the same time. Such an alarm should, I need scarcely say, be accompanied by suggestions as to how an infection may be avoided with due care. To do this, we have ourselves to be conversant with known facts concerning the characters of the germs of disease. To deliver a thundering lecture on Bacteriology to them we should never attempt. But simple facts, gently expressed, with due consideration for their unscientific nerves, if I may so say, will be listened to and grasped with intelligence. Tell them that the so-called "Typhoid Fever" is caused by a minute germ intruder from various sources (as we shall presently see) gaining access within our stomachs; that it is conveyed within in the foods we take; that boiling water and cooking food kills these germs (because they are killed, we know, at 60° C. in 10 minutes); and various other facts that we shall now consider. You will agree with me when I say that scientific truths will have to be rewritten, and written in plain and unpedantic language, if they are to serve any useful purpose to the world at large.

Coming to our *Bacillus* of Typhoid Fever, we have found out that a temperature of 60° C. kills it in 10 minutes. This fact is of paramount importance as you already see, for, we can avoid the disease if we heat all our food materials above 60° C.—boil them or cook them in other ways. The germ is said to live for three months in ice—(this does not

exclude "ice-cream," which would be a capital medium to thrive on, especially if undisturbed by not finding a sale for a week or two!)

The direct rays of the sun destroy them in from 4-10 hours—and this effective method of killing the germs can be had for the opening of the windows of the patient's room. Under circumstances favourable to the bacilli, they have lived in drinking water for 80 days. Clothes soiled by the excreta of a typhoid patient, if not disinfected, can retain the bacilli alive for three months. This is one of the common sources of the spread of the infection; and this fact would indicate that one chief source of infection may be avoided by paying strict attention to disinfect all the linen, etc., that was in contact with the patient.

5 p. c. carbolic lotion or 1-1000 corrosive lotion would kill the germs if mixed with it and laid aside for one hour. Fæcal and urinary discharges are best disinfected by our making use of these facts. In general, the conditions favouring the widespread distribution of these agents of enteric fever, may be stated as follows:—

Imperfect sewage, contaminated water-supply, over-crowding, bad ventilation, and "filth" of all kinds—these various causes operate in such a manner as to bring about a deposition of the specific bacillus typhosus into our digestive canal, either directly or indirectly from a source of infection. It is even thought—and this view only makes the problem of prophylaxis a simpler one than otherwise—that the human body plays the chief part in the distribution of the germs to the other media that in their turn re-infect man. But to say so sounds like saying that the source of all water is the clouds. It would also be true to say that the source of all clouds is water! For our purpose it is sufficient if we can prevent the bacilli entering our bodies, and, destroy all those that leave it. One single break in the vicious circle of contamination and infection, and infection and contamination if effectively brought about, may be expected to remove, in course of time, the possibility of future infection.

A sanitary officer's duty in these matters may be said to resolve itself into:—

(1) Trying to prevent bodily infection by discovering the sources of it:

(2) Confining the spread of the infection that has established itself, and by destroying all the emanations from a known case of infection.

We must not at the same time forget, that a correct diagnosis of all suspicious cases of "fevers" by the practising medical men, is an abso-

disease, the problem confronting us is the difficult one of how to adopt preventive measures in relation to these innocent "carriers" of the Typhoid Bacilli.

(b) Water-borne Infection.

This is the most common mode of conveyance of infection in epidemics. The contamination may take place at one or more points along the route of the flow of water — from the multitudinous oozing springs along a stream or in a lake on its course, and along channels of supply or in the reservoirs of a city, or along the main and small supply pipes that lead down to the houses. The ejecta of patients or of individuals who are themselves immune (the "typhoid carriers") deposited in close proximity to the route taken by the city water supply, may find their way into the water and thus produce a widespread epidemic.

Water from stagnating wells, if infected once, may be another source of danger. Well-water can also be infected from the surface soil, by the return of the ground water to the deeper levels in the earth after a rainy season. Rivers may get polluted at some part of their course. In a city water supply, the drinking water pipes are laid not far from the drainage and sewer pipes that most probably convey infective excrementitious matter from houses where disinfection is at a discount. And, if the flow in both these sets of pipes is retarded, and leakages exist within a few feet of each other, the intervening soil is soon soaked with the sewage, and gains entrance into the drinking water pipes. In those parts of the city where the flow of water is intermittent (*e.g.*, in the high level sections), the pipes are alternately full of water and emptied of it. Whenever there is a stoppage of the flow, if we open a tap in one of these places, we hear the pipe sucking in air through the mouth of the tap (this is always noticed on Sunday afternoons when the pipes near the cisterns undergo cleaning operations). Now, supposing we hold near the mouth of the tap a handful of earth or a semifluid mixture of earth and water, what will happen? Some of the earth would surely be sucked into the pipe. Precisely the same thing happens in the case of the high level drinking water pipes, if there is a leakage. Suction will take in infective materials from the contaminated soil, and disease will result. Old, defective or damaged pipes, or careless plumbing may thus result in an epidemic of varying severity.

(c) Food Infection.

All cooked food is free from harm if *not infected subsequent to the cooking* by soiled hands, or spoons, or insects or dust, etc.

But in the majority of instances, cooked food becomes infected on exposure to dust, flies, soiled hands or verminous mice and rats,

lutely necessary condition, if an infection is to be fought out and destroyed. A failure to diagnose a case of fever that is typhoid in its nature, or, what is worse, to be lulled into an incorrect diagnosis of "ordinary fever" in a patient with real enteric, is likely to make us forget, or relax in, the principles of disinfection required in this serious disease.

Let us therefore consider the "*sources*" of infection so called:—

Water and soil are termed some of the "*sources*" of the typhoid infectious matter. But we need not stop to enquire what is the ultimate *source* of it. The *modes of conveyance* of the infection are all that we need enquire about here. Of these, we shall consider:—

- (a) Contagion—transmission from person to person.
- (b) Water-borne infection.
- (c) Food infection, (milk, etc.)
- (d) Soil infection.

Contagion.

Direct handling of materials containing the bacilli—whether it be the urine, or the fæces, or the soiled linen—may convey infection into the body.

What are, to all appearance, clean fingers may be surgically unclean—in other words, scores of bacilli of the kind we are now considering, may lodge between the minute ridges and papillae of the skin, in spite of a strong jet of water being directed on it, after contact, say, with fæcal matter, as in cleaning the nates of a patient after defecation.

The organisms in these deep grooves of the skin multiply, and in time get pushed on to the surface of it—from there to be conveyed along with any food materials that are handled.

The fæces of the typhoid fever patient swarms with the bacilli from the very beginning of the disease.

The urine may hold them from about the 3rd week of the attack, in about 25 p. c. of cases. While the fæcal matter contains the *Bacillus Typhosus* only *during* the febrile attack, the urine, on the other hand, continues to hold it in large numbers for *weeks* or even *months*, after the patient has recovered and resumed business. More than that, the bacillus has been known to lie dormant for long periods in the gall bladder, and now and again produce (intermittent) attacks of bacilluria or urine containing bacillus. The patients themselves (called "typhoid carriers") enjoy immunity from fresh attacks of the fever. Knowing well, as we do, the part played by the bacillary urine in the spread of the

Although we boil all the milk we take, we scarcely think of boiling butter-milk that we buy from those strange-looking vendors whose startling cries make some of us dread an approaching possible infection! Boiled milk may be free from living bacilli; but the milk adulterated with tap-water is very probably *not* free from bacilli, even when measured out of clean pots, with the accompaniment of the most solemn of assurances that not a single molecule of water has been taken near it! We have mentioned infected ice-cream, as a derivative of infected milk. Ghee may also become a medium for Ty.-bacilli to live in for a short while.

Sweets, "murukus" and their allies, "pattanees" of all kinds, fruits—all these may endanger health by being exposed for sale directly over the dust of the roads, or by being handled by a "typhoid carrier." The "filthy feet of faecal feeding flies" that settle, now on typhoid discharges by preference, and then, for a change, on the only meal of a labourer; the different species of ants and cockroaches and moths—quite a museum—that alas find themselves drowned in the very fluids they have come to feed on; the mice that can smuggle themselves through the smallest hole right into a kitchen cup-board, inspiring a superstitious awe in the minds of the owners; and the rats that establish marvellously short communications between our kitchens and our neighbours privies!—these are some of the active disseminators of the typhoid bacilli.

(d) *Soil Infections.*

On surface soil the bacilli can live for as long as 11 months.

Porous soil containing organic matter is specially adapted for their growth. Recurrent or sporadic cases of typhoid fever probably may be traced to the soil.

DIAGNOSIS OF TYPHOID FEVER.

We have seen that in order to adopt preventive measures against the spread of typhoid fever, a timely and a proper diagnosis is absolutely essential.

Madras offers special obstacles to a proper diagnosis by differentiation, of cases of prolonged fever, even supposing that *all* the medical practitioners that do practise their profession here are capable of undertaking this difficult problem. The co-existence of other varieties of continued fever with somewhat similar initial symptoms, and the irresistible temptation to rush for the cinchona alkaloid and console ourselves into the belief that everything has been done that could be done for a case of fever—these are some of the peculiarities of Madras.

The typical case of typhoid fever may present certain characters:—

The onset is gradual and insidious, with a period of general *malaise* and headache, etc. The temperature rises by gradual degrees to 104, or thereabouts; and it rises in a "step-ladder-like" manner. The chart will show that the temperature does not come to the normal until the end of the fever—3 weeks. The spleen is enlarged and soft. Rose coloured spots of eruptions may be seen on the chest and abdomen.

The recovery of T.-Bacillus from the stools, blood or urine and the leucocyte count are not within the scope of the daily work of the general practitioner. But the most important test, the test that would establish the diagnosis beyond a doubt, is the "agglutination test of Widal." This test depends upon the principle that actively moving typhoid bacilli cease their movements a few minutes after mixing them with the serum of a typhoid fever patient. Agglutinometers can be had now-a-days, by the help of which the reaction can be observed without the aid of a microscope. Or, in doubtful cases medical men should be required to have the blood sent for examination to a laboratory situated within their reach.

Some minor symptoms that may help us in the diagnosis are:—

Nose bleed, tenderness in the Rt. iliac fossa, the "typhoid tongue" with its V-shaped red tip and brilliant edges, the "pea-soup" stools, head-ache, delirium, and profound prostration (the "typhoid state").

DIFFERENCE BETWEEN MALARIA AND TYPHOID.

In malaria the typical "ague" attack is characteristic. Quinine gives relief after a few properly administered doses, and the blood would show pigments or plasmodia. In typhoid, quinine has no marked effect on the fever, and the temperature rises steadily without any intermission; and there are no plasmodia-like bodies in the blood. Widal reaction is positive.

Suspicion of enteric may be aroused by the existence of an epidemic, by the age of the patient (usually within 17—25 years) and by a general consideration of the above-mentioned symptoms.

Pneumonia has a sudden marked onset, and chest signs. A word about the investigation of cases of typhoid fever:—

A little of the Sherlock Holmes instinct will help us. We should note down cases as they occur in different houses or localities. If the infection is wide-spread, suspect the water-supply and look for the source of infection upstream at every stage of it. If limited to a few streets or houses, enquire into the water-supply, and also about articles of food

such as butter-milk, etc., that might have been sold to those houses. If one and the same butter-milk vendor has been supplying that article to the houses mentioned, the innocence of the vendor requires further confirmation.

The really puzzling cases to trace are those where a "typhoid carrier," who is himself immune, has been the source of infection.

TREATMENT.

We may now turn to the *Treatment* of T.F., so far as you have to be responsible for as sanitary advisers.

Preventive measures must be begun as soon as typhoid fever is suspected (not necessarily accurately diagnosed), bearing in mind the principles we have laid down. All water drunk should be boiled. A strict supervision should be exercised on the aerated water factories.

The question arises: How is the poor man to boil his water always? We leave it for the economists to reply.

All food should be recommended to be kept tightly closed in proper vessels. If possible, insect resorts should be probed and the whole brood exterminated. There is a good deal of room for the exercise of ingenuity in improving the flooring of our houses. Subterranean engineering projects by rodents should be discouraged, and future houses should be advised to be constructed with special attention to this detail.

Convince, if possible, the milk-man, of the seriousness of milk adulteration with tap water. Perhaps it may be made possible for householders to buy their food stuffs from one and the same tradesman who may be licensed to sell them.

Sewage requires speedy removal through water-tight pipes.

Unqualified medical practitioners should be taught the use of antiseptics to prevent infection from house to house—(also nurses and attendants). A patient with the fever should be isolated either in the house if strict observance of the rules of antisepsis is possible, or to Isolation Hospitals built for the purpose, as in Europe. Wherever isolated, compulsory notification to the Health Officer should be insisted upon.

It has been suggested that the Typhoid convalescents should occasionally submit themselves to periodical examinations of their urine and blood, with a view to avoiding "infection carrying."

All the discharges from the patient should be treated with a prolonged exposure to 5 p.c. solution of ZnCl_2 , 1—1000 HgCl_2 , or 5 p.c. carbolic. The faeces should be broken up and exposed for at least an hour in sufficient 5 p.c. carbolic, or corrosive to cover it. The attendant's hands may be covered with gloves, or washed with the disinfecting lotion for a few minutes. After defecation, the nates should be cleaned with carbolised tow which must be burnt soon after use. Infected clothing, if not costly, may be burnt; otherwise disinfection must be carried out by a special department of the Health Office, at charges payable by the patient.

After the patient has been removed the room will have to be disinfected by scrubbing the walls and floors with corrosive sublimate, and burning sulphur within sealed doors and windows in the proportion of 3-3. of sulphur to each c.m. of space. After 24 hours, air and light may be let into the room which should remain unoccupied for at least a week. This programme of treatment no doubt offers great many obstacles in its practical application.

However, with the co-operation of the public and the general medical practitioners, the little band of sanitary officers in Madras, let us hope, will face all obstacles bravely and raise Madras above the level of the ancient Asiatic cities.

Cases and Comments.

Rupture of Spleen into Two Pieces without External Marks of Injury.

BY

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The body of a female, well nourished, aged about 50 years, was examined on 20-8-1910, when the *rigor mortis* had passed off. There were no traces of external injury on the trunk. On opening the abdomen, the soft tissues on the left hypochondriac region were found deeply congested and blackish in colour, on the inner side. Ribs were all intact. Peritoneum deeply congested. Peritoneal cavity contained about one lb. of dark fluid blood. The spleen in its natural size was actually found in two pieces—one weighing $3\frac{1}{2}$ oz. and the other $\frac{1}{2}$ oz. The pieces were soft and mass like, with no parts missing. The organ appeared to be healthy. The organs around were found congested.

THE ANTISEPTIC.

FEBRUARY, 1911.

Psychopathia Sexualis in a Mahatma.

A Clinical Study.



WE have nothing to do with Theosophy. We have never had the pleasure of meeting a Mahatma. And if we now venture to discuss the development of Psychopathia Sexualis in a Mahatma we do so more out of scientific interest in the pathology of the disease than out of curiosity to understand the nature of those mysterious personalities vaguely known as Mahatmas. The Theosophical Society has been an established institution in Madras for a long number of years. Large numbers of educated Indian gentlemen of good social position have joined the ranks of that society, and its teachings undoubtedly exercise an important influence, at the present time, in the evolution of Indian thought and the development of Indian character. It was, therefore, with painful surprise that we learned recently of the existence of an individual of the name of Mr. Leadbeater who is connected with the Theosophical Society and who is alleged to have taught young boys given to his care habits of self-abuse. At first we thought that the whole story was a practical joke concocted by some individual who wanted to raise a laugh at the expense of the Theosophical Society. But within the last few days we have been favoured with some issues of a magazine called the *Theosophic Voice* in the pages of which is unfolded the story of Mr. Leadbeater and his teaching that self-abuse is the right and proper remedy for sex-hunger and the bulwark of chastity. The account of Mr. Leadbeater's teachings and their effect on his relations with the Theosophical Society we had better place before our readers in the words of Mr. Burrows, a prominent member of the Theosophical Society. Speaking at the British Convention of Theosophists, Mr. Burrows said:—

The actual charge against Mr. Leadbeater was that he deliberately taught masturbation or self-abuse to boys in his care, under a pledge of secrecy and unknown to their parents. That is the literal charge. I put on one side for a moment any evidence for this charge or defence against it. Both these I will come to later. I am now giving the bare fact, which no one disputes, because no one of course denies the fact that the charge was made.

The trouble initiated in the American Section, and I cannot do better than read to you some portions of a document which was issued on May 18th, 1906, by Mr.

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Alexander Fullerton, the then General Secretary of that Section to its members. It is a literal recital of circumstances, and those initial circumstances have never, as far as I know, been disputed, although others have. This is the part of the circular to which I refer:

"After stating how rumours, afterwards proved to have been current for years in India, Ceylon and England, reached this country, that one of our most eminent Theosophical lecturers and workers (referred to as X) had been deliberately teaching masturbation to boys in his charge, and the rumours having been verified by direct testimony from boys in the States, the narrative part of the circular thus proceeds.

"A memorial was then addressed to Mrs. Besant containing the testimony up to that date, and signed by the heads of the Esoteric Section and the Theosophical Society in this country, a duplicate being sent to X. Mrs. Besant replied to the Head of the Esoteric Section and X replied to Mr. Fullerton. X admitted the facts and explained that he taught masturbation to boys as a protection against relations with women. Mrs. Besant utterly repudiated such doctrine and such practice, but considered X's motive as sincere. Mrs. Besant's own sincerity of course cannot be questioned, but the appearance of later testimony utterly demolishes her stand. This is in part the testimony of still another boy, but even more emphatically the discovery of two notes from X to two boys. It is impossible to put such writings in print, but their pruriency, their cold-blooded injunctions as to methods and times of indulgence, and the personal satisfaction expressed in the remark 'Glad sensation is so pleasant,' all make impossible the defence that the prescriptions were given from honest desire to save the victims from sex relation.

"It was very clear that teaching and practice of this kind could not be tolerated in a teacher, more especially, because access to the boys had been obtained through a deceptive assertion made to the parents. The assertion was that it was the practice of X to explain to boys in his care the nature of the sex function and the danger of its abuse, though without the slightest hint that he gave masturbation as a remedy. If this had been stated, the boys would not have been entrusted to him. The boys thus approached were from thirteen to fourteen years of age.

"No direct action has been hitherto possible by other Sections because of the absence of proof, but the proof existed here from testimony and from X's own admissions, and it was felt that immediate action by the American Section was obligatory. A meeting of the Executive Committee was therefore called for April 13th in the City of New York. All the members were present save the one from San Francisco, who was unable to come but telegraphed approval of the step. The Committee sat all day and was assisted in its deliberations by representative Theosophists from Philadelphia, Boston, Toronto and Chicago. The unanimous outcome was as follows: First, that X should be presented for trial to the Lodge whereto he belongs; Second, that a special delegate should proceed as quickly as possible to England and personally see Colonel Olcott, the General Secretary of the British Section, the authorities of the defendant's Lodge, and the defendant himself. This delegate, Mr. Robert A. Burnett of Chicago, sailed on April 28th, armed with much discretionary power as to the settlement of the case. It was understood that if X agreed to retire absolutely from all membership in or connection with the Theosophical Society and its work, the prosecution before his Lodge would not be pressed. Successive telegraphed reports by the delegate were that the local sympathy with him in his mission was very strong, and that Colonel Olcott had telegraphed X to come at once from Italy to attend a meeting of the

British Executive Committee on May 16th. On the evening of that day the delegate telegraphed that his mission had been wholly successful, and that X had retired utterly from all connection with the Theosophical Society. Thus a painful trial and an increased danger of publicity have happily been avoided."

The Committee of Inquiry met in London at the Grosvenor Hotel, on May 16th, 1906. Its Members were Colonel Olcott (in the chair), Mr. Sinnett, Dr. Nunn, Mr. Bead, Mrs. Stead, Miss Ward, Miss Spink, Mrs. Hooper, Mr. Keightley, Mr. Thomas, and Mr. Glass who acted as Secretary. There were also present Mr. Burnet, as representative of the Executive Committee of the American Section, and M. Bernard, as representative of the Executive Committee of the French Section.

To the fairness and impartiality of such a Committee I am quite certain no member of the Society would raise the slightest objection.

A full short-hand report of its proceedings was taken by Mr. Glass, and of the manuscript of that report there are several copies in existence. We have one here this afternoon. Mr. Leadbeater was, of course, present at the Committee and had the fullest and amplest opportunity of explaining, defending and justifying himself. He admitted that the charge which was brought against him of teaching self-abuse to boys was true and also admitted something else which both here and in America would bring him within the pale of the criminal law.

Mr. Thomas put this question to him: "There was definite action?"

Mr. Leadbeater: "You mean touch. That might have taken place."

That of course is nothing less than indecent assault.

Mr. Leadbeater had asked Colonel Olcott what he had better do, and the Colonel told him he should resign. A few minutes before the Committee opened, Mr. Leadbeater wrote a letter of resignation to Colonel Olcott to be used if necessary. At the end of the Inquiry the Committee deliberated as to whether Mr. Leadbeater's resignation should be accepted or whether he should be expelled from the Theosophical Society. There was a close division of opinion, but in the end the resignation was accepted in the terms of the following resolution:—

"That having considered certain charges against Mr. Leadbeater, and having listened to his explanation, the Committee recommend the acceptance by the President Founder of his (Mr. Leadbeater's) resignation already offered in anticipation of the Committee's decision."

These statements of Mr. Burrows sum up the case against Mr. Leadbeater. Now we shall quote from Mrs. Besant's letter which contains an exceedingly able defence of Mr. Leadbeater. Here is what Mrs. Besant has to say about the charge against Mr. Leadbeater:—

I turn now to the accusations against Mr. Leadbeater, reminding the Society against whom these accusations are levelled. Mr. Leadbeater was a clergyman of the Church of England who in 1883 entered the Theosophical Society and in 1884 threw up his career to devote his ripe manhood to its service. From that date until now he has served it with unwavering fidelity, through good and evil report, has travelled all over the world to spread its teachings, has contributed to its literature some of its most valued volumes, and thousands, both inside and outside the Society, owe to him the priceless knowledge of Theosophy. During the last two and a half years, under a hurricane of attack as unexampled as his services, he has remained silent, rather than that the Society should suffer his reproach. Because he loved the Society better than his own good name, I, at his wish, have also kept

silence. But now that I am appealed to, I will speak, and the more gladly because I also wronged him, believing that he had admitted certain statements as true; I wrote in 1906: "On June 7th, I received an account of the acceptance by Mr. Leadbeater before the Committee of the facts alleged in the evidence"; I thus accepted on what I believed to be his own word, that which, on the word of others, I had rejected as impossible, and that which I ought to have continued to reject even coming as from himself; both he and I have suffered by my blunder, for which I have apologized to him, to an extent which our unmerciful critics little imagine; but it is over, and never the shadow of a cloud can come between us again.

The so-called trial of Mr. Leadbeater was a travesty of justice. He came before judges, one of whom had declared beforehand that "he ought to be shot"; another, before hearing him, had written passionate denunciations of him; a third and fourth had accepted, on purely psychic testimony, unsupported by any evidence, the view that he was grossly immoral and a danger to the Society; in the commonest justice, these persons ought not to have been allowed to sit in judgment. As to the "evidence," he stated at the time: "I have only just now seen anything at all of the documents, except the first letter"; on his hasty perusal of them, he stated that some of the points "are untrue, and others so distorted that they do not represent the facts"; yet it was on these points, unsifted and unproven, declared by him to be untrue and distorted, that he was condemned, and has since been attacked.

It was also on these points that I condemned his teaching; on the central matter I had before expressed disagreement, but no condemnation.

The following statement is the one which has been so widely used against him, and contains the teaching that both he and I condemn. That condemnation I hold to, but the teaching thus condemned was never his; part of it was repudiated by him before the Advisory Council in 1906, and the rest of it had been denied in a private letter of February, 1906, since widely published. I wrote, on the false information then in my hands:

"The advice supposed to be given to rescue a boy, as a last resort, in the grip of sexual passions, became advice putting foul ideas into the minds of boys innocent of all sex impulses, and the long intervals, the rare relief, became twenty-four hours in length, a daily habit. It was conceivable that the advice, as supposed to have been given, had been given with pure intent, and the presumption was so, in a teacher of Theosophical morality; anything else seemed incredible. But such advice as was given in fact, such dealing with boys before sex passion had awakened, could only be given with pure intent if the giver were, on this point, insane."

The two points on which stress is laid here, to which my condemnation applies were: (1) the fouling of "the minds of boys innocent of all sex impulses"; (2) the advice for daily self-indulgence. Neither of these is true, and with the falsity of these, my condemnation no longer applies to Mr. Leadbeater's advice.

(1) In the case on which most stress had been laid, the boy had already contracted an evil habit; Mr. Leadbeater found it impossible to cure the vice at once, but he induced the boy to give up his daily habit, and to lessen the frequency of the self-indulgence, gradually lengthening the intervals, that it might at last be entirely renounced. In a second case, the boy wrote to his father, expressing his intense gratitude to Mr. Leadbeater for helping him, and adding: "They were to be continued only for a very short time. Do not call them a habit, because they were never intended to be anything of the kind." Instead, then, of advising self-indulgence, Mr. Leadbeater sought to help boys in their difficulties, by leading gradually

up to a perfect control of the sex-functions, laying especial stress upon the avoidance of haunting lascivious thoughts. If a man is poisoned with arsenic, what is the treatment by a doctor? He does not cut off the poison at once, for that would kill; he prescribes lessening doses till the body regains its normal state. Is the doctor to be denounced as a poisoner because he takes the only means of saving his patient?

Mr. Leadbeater says positively that he has never given such advice except in cases where certain symptoms had already shown themselves either on the physical plane or in the aura, even though in one or two instances this may have taken place before what is commonly called puberty. Unhappily—as is known to every teacher of children—this vice is found at a very early age, an age much below that of any boy to whom Mr. Leadbeater spoke. This statement of his—sufficient to all of us who know him—is thoroughly borne out by the fact that most of the boys who were much in his company had never heard of any such advice being given. His usual habit was to speak to the boy of the danger of both solitary and associated vice, to advise non-stimulating diet, exercise, and the turning of thought away from subjects connected with sex—advice on the lines borne witness to by a lad who was much with him in a brave letter to the *Vahan*. This was Mr. Leadbeater's ordinary advice, as it is the advice of all of us.

(2) This Mr. Leadbeater positively denied before the Advisory Committee, and there is not a shred of evidence to support the charge. He said: "The interlineation in writing giving a statement by the mother as to interval is untrue. The original interval was a week, and then it was lengthened to ten days, then a fortnight, and so on."

I ask the members of the Theosophical Society to consider whether this simple explanation is not more consonant with the character of the great teacher who has lived among them for twenty-four years, than the lurid picture of the monster of sexual vice painted by the inflamed fancy of a few Americans and English? It must be remembered that every effort has been made to construct personal charges against him without avail.

I have had in my possession for nearly two years a letter from one of Mr. Leadbeater's most prominent enemies, addressed to a boy whom Mr. Leadbeater was said to have corrupted, in which (with many caressing words, himself using an expression stronger than that which has been taken, in Mr. Leadbeater's case, to impropriety) the writer tried to coax the boy into confessing criminal relations with Mr. Leadbeater, begging him not to show the letter to his father, and to destroy it when read. The lad, utterly ignorant of what was suggested, took the letter to his father, and the father indignantly sent a copy to me. I have also seen the original.

It is not true that this advice was given as theosophical or occult. On the contrary, Mr. Leadbeater had stated throughout that it was a purely physical matter, from his stand-point, and was given as a doctor gives advice to a patient, as a temporary expedient to avoid a worse danger, while lifting the boy out of vice into purity. Mr. Leadbeater agrees with me that the advice is dangerous when scattered broadcast—as has been done by his assailants—and from the very first he volunteered the promise never to give it again; but in the few special cases in which he gave it, he thought he had safeguarded it from the obvious danger.

Much has been made of a "cipher letter." The use of the cipher arose from an old story in the *Theosophist*, repeated by Mr. Leadbeater to a few lads; they, as boys will, took up the cipher with enthusiasm, and it was subsequently sometimes

used in correspondence with the boys who had been present when the story was told. In a type-written note on a fragment of paper, undated and unsigned, relating to an astral experience, a few words in cipher occur on the incriminated advice. Then follows a sentence, unconnected with the context, on which a foul construction has been placed. That the boy did not so read it is proved by a letter of his to Mr. Leadbeater—not sent, but shown to me by his mother—in which he expresses his puzzlement as to what it meant, as he well might. There is something very suspicious about the use of this letter. It was carefully kept away from Mr. Leadbeater, though widely circulated against the wish of the father and mother, and when a copy was lately sent to him by a friend, he did not recognize it in its present form, and stated emphatically that he had never used the phrase with regard to any sexual act. It may go with the Coulomb and Pigott letters.

There is no doubt that the sex problem is in the air, and it may be, as Dr. Van Hook thinks, that that problem must be discussed in the Theosophical Society, as it is being discussed by sociologists, doctors and teachers outside. It can, however, only be decently and usefully discussed by mature men and women, possessed of physiological and pathological knowledge and of experience of the darker side of life. On the moral question we are all at one; it is the method of dealing with dangerous physiological conditions which is under debate. Personally I think—basing the view on well known physiological facts—that as every secretory gland is readily stimulated by thought, and without stimulation does not work to excess, the occupation of the mind along healthy lines will generally avoid dangerous excess, and will preserve in the body the vital elements necessary for the continuance of youth and strength. Dr. Van Hook's medical experience is, of course, enormously wider than my own, but many doctors hold the view expressed by me that nature may, in normal cases, be left to give any necessary relief. But this does not touch Mr. Leadbeater's effort to help boys through a difficult period by counsel often given by Catholic priests under similar circumstances, and given by himself when a priest of the English Church. Mr. Mead has lately stated, in the pages of the *Theosophical Review*, that the facts of sex should be explained to boys and girls so as to avoid the dangers to which they are exposed by hearing the coarse talk of evil-minded servants or vicious comrades. I agree with him on this, but he will be a bold man who ventures to give such instruction, in the face of the hideous misconstruction with which Mr. Leadbeater has been met. The giving by an elder of a scientific and common sense explanation would be incredible to a society which can only regard sex through an atmosphere of prudery or vice. In all speech thereon a vicious purpose would be taken for granted.

Our readers have now before them both sides of the case. Both Mr. Burrows and Mrs. Besant speak of Mr. Leadbeater's cipher letter to his pupil. But neither party has furnished us with the text of that letter. The *Theosophic Voice*, however, gives us some information about the contents of that letter. Says the *Theosophic Voice*: "The cipher letter is unspeakable. It contains specific instructions how to proceed in the application of Mr. Leadbeater's sexual methods; an enquiry into the sex functions of the 'recipient,' and ends up with the following statement:—'Glad sensation is so pleasant. A thousand kisses darling.'"

A careful study of what has been said on both sides of this question reveals this fact, that Mr. Leadbeater did teach certain boys the practice

of masturbation. We are prepared to accept Mr Leadbeater's statement that he never advised boys indiscriminately to practise masturbation, but that he carefully selected his pupils who were to be initiated into the mysteries of Onanism. That is fact number one. Secondly, the cipher letter conveying Mr. Leadbeater's one thousand kisses to his 'darling' pupil boy taken along with the statement made by Mr. Burrows that Mr. Leadbeater regularly took these boys "to sleep with him, although they strongly objected, and begged for a separate room" creates a strong suspicion of the existence of homo-sexual tendencies in Mr. Leadbeater. But apart from that—and we know that we have both homo-sexual and hetero-sexual masturbators—the admission that Mr. Leadbeater did advise certain boys to masturbate and that he justifies his action on physiological grounds leads us to a very interesting scientific enquiry. Is masturbation ever physiological? That is a very very old controversy. Masturbation has not only been practised by many learned and saintly personages, it has also been defended by very eminent scientific men. We find Friedrich Nietzsche practically supporting this objectionable practice when he says:—"Our impulses must be worked out. The life of the learned man more especially demands something of the kind." Among Hindus we are told that masturbation has received Tantraic sanction. And there are many modern scientific men who also believe that auto-erotism is to a certain extent a physiological manifestation.

Dr. Iwan Bloch of Berlin thinks that masturbation becomes morbid only in individuals who were previously morbid. Dr. August Forel calls masturbation which does not depend on an anomaly of the sexual appetite, but which serves to gratify a natural want, as *compensatory* masturbation, and this variety he considers to be the least dangerous form of onanism. But whatever classification one might adopt of the varieties of masturbation, the loss of will power and the occurrence of a certain amount of nervous and mental exhaustion result from every kind of masturbation. As a result of the loss of will power the masturbation of childhood and youth develops into a condition of formal onanism. Masturbation is almost always ore harmful than sexual connection with the opposite sex because (1) it is begun much earlier when the body has not yet developed any marked capacity for resistance. (2) Again it is more dangerous because it can be carried out much more frequently. (3) But perhaps the greatest danger of all consists in the mental changes produced by masturbation. As a rule we find that in, the region of sexual pathology the genital organs play only a secondary part, except in the case of venereal diseases. In most other cases the

brain is the domain of all sexual anomalies. This is particularly so in the case of the masturbator. The masturbator seeks solitude, becomes shy of human beings, reserved, morose, unhappy, hypochondriacal. He loses all self-confidence and is without any will power. Among the physical consequences the eye is the organ that suffers most easily. Irritable states of the conjunctiva, spasms of the eyelids, weakness of accommodation, subjective sensations of light and photophobia are some of the results of excessive masturbation. The so-called masturbator's heart which is characterized by irregularity of the pulse and by sensation of pressure and pain in the cardiac region and by palpitation is also not a very rare consequence of this vicious practice. Purely local changes in the genital organs themselves are by no means rare, and when they appear they are generally seen in the form of inflammatory states of the prostate gland, spermatorrhœa and prostaticorrhœa. One very serious consequence of onanism is the disinclination to normal sexual intercourse to which the habit gives rise and the production of sexual perversions. This is of special interest to people in this country where early marriages are so common. In Europe a habitual masturbator with disinclination to normal sexual intercourse may remain unmarried. In India by the time the youthful masturbator develops into the state with aversion to sexual intercourse he has already gone through the religious form of marriage with an innocent girl and by the time the marriage is consummated the husband's inclinations to marital intercourse are gone and the foundations of a miserable domestic life are laid. We have been consulted professionally by several such unhappy husbands but in the majority of cases it was too late to effect any improvements. But perhaps the worst disease associated with masturbation is a form of insanity called masturbational insanity. As this is a most interesting form of mental disease, which is not very well understood in this country even by some of the medical men, we offer no apology for quoting a description of the condition from Dr. Clouston's lectures on mental diseases. Dr. Clouston says:—"There is a special form of mental disease, however, in which masturbation is the chief cause of the malady; it is the chief symptom present, and it gives the whole case distinct features. This has been named the insanity of masturbation and has several well marked features. It comes on in youth; it generally begins by an exaggerated and morbid self-feeling, or by a shallow conceited introspection, or by a frothy and emotional religious condition, or by a restless and unsettled state with foolish hatchings of philanthropic schemes. There is no continuity or force in any train of

thought or course of action. Then comes a melancholic stage of solitary habits, disinclination for company, variableness of mood, hypochondriacal brooding, vacillation, and perversion of feeling towards near relations. Suicide is often thought of, but masturbation makes most of its victims too cowardly to kill themselves. Then an acute attack follows, usually of a maniacal kind. This may end in recovery, or may run quickly into a dementia that is masturbational in character, being solitary, unsocial and subject to impulses, sometimes homicidal—a sort of masturbational hyperkinesia. With these mental symptoms there are usually well-marked bodily signs of the disease. The patient is thin, pale and pasty, with a cold clammy skin, a haggard face, and an eye that never looks straight at you. He has weakness in the back, pains in the head, palpitation of the heart, impaired sight, muscular relaxation and sometimes spermatorrhœa." And so on Dr. Clouston proceeds with his graphic word-picture of this degrading malady. It is nearly twenty years since we sat in the class room at Edinburgh and listened to the descriptions of this particular class of mental disease. But how often since then it has been our painful duty to receive in our consulting room living examples who exhibited most, if not all the symptoms we heard so graphically described by Dr. Clouston in our 'Varsity days. The sufferers were in most cases students in some one or other of the educational institutions in Madras. The pernicious habit had got hold of these unfortunate young men even without the spiritual guidance of Mr. Leadbeater. That high priest of onanism, with his boasted powers of seeing through thousands of past years, and the astute Dr. Van Hook, who merely writes letters to the dictation of Mahatmas, may exercise a considerable amount of influence over the younger generation of students in Madras. We do not contemplate with any feelings of satisfaction the establishment of a Temple of Onanism so close to Madras. And it is especially disquieting to be told that the advice to masturbate is not to be confined to the select few of the Theosophical Society but is to be spread broadcast. Dr. Van Hook in one of his letters says:—"The introduction of this question into the thought of the Theosophical world is but the precursor of its introduction into the thought of the world * * * No mistake was made by Leadbeater in the nature of the advice he gave his boys. No mistake was made in the way he gave it. Nor did he make any mistake in the just estimation of the consequences of any other solution of the terrible problem which was presented to him." That is Dr. Van Hook's justification of Mr. Leadbeater. And that is one of the letters which Dr. Van Hook says

was dictated to him word for word by a Master and for which Dr. Van Hook claims nothing for himself save the function of a scribe. If that statement is true then we have no hesitation in saying that the particular Mahatma who uses Dr. Van Hook as his 'scribe' is suffering from Psychopathia Sexualis. And this sexual neurasthenic Mahatma may really be at the bottom of the teaching to practise masturbation in order to escape more serious consequences, for we find that although Mrs. Besant at first condemned the practice and said in effect that in this respect Mr. Leadbeater was insane, yet subsequently she supported the Leadbeater practice of carefully selecting boys who were satisfactory subjects for receiving instruction in the practice of masturbation. That change of front on the part of Mrs. Besant may have been due to Mahatmaic intervention. Then again Dr. Van Hook's defence of Mr. Leadbeater is entirely attributed to the Mahatma. We are told by Mrs. Besant that Dr. Van Hook's statement that his letters were dictated to him by a Master was not intended to be made public. It is to be regretted that within the Theosophic circle private conversations are given out to the public. But, however, the fact remains that Dr. Van Hook did claim that his letters were dictated to him by a Master. And we are told that the Mahatma who is an authority on masturbation is the Mahatma K. H. The other Mahatma—the one known as Mahatma M—does not seem to have interfered with the special department of his colleague. We have nothing but pity for these sexual degenerates—the Mahatma K. H. and Mr. Leadbeater and the rest. They are paying the penalty for a life unphysiologically spent. That a sexual degenerate like Leadbeater should pose as a seer who could see into the future and the past we can easily understand. We wonder if he can see far back enough to make out and tell us whether in one of his previous births he was Onan, the son of Juda and Suah and grandson of Israel. But whatever he was in his previous existence, he is at present a public danger in Madras. We trust that the members of the medical profession will do all that lies in their power to mitigate the evil effects of the teaching of the Mahatma suffering from Psychopathia Sexualis and his disgusting instrument Mr. Leadbeater.

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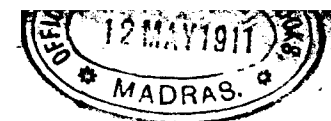
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* THE TREATMENT OF EPILEPSY.

BY

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WHEN a medical man is called in to treat a case of epilepsy, there are two things required of him. They are:—

(1) Diagnosis, without which the treatment cannot be directed in any particular way.

(2) Prompt treatment.

In addition to the two I may also add a third one, viz:—

(3) Finding out the etiology, which at first sight may not appear to be quite essential in the treatment, but from the fact that there is a special variety of syphilitic epilepsy and from the fact that some forms of infantile convulsions may directly develop into true epilepsy, one is bound to think that removal of the cause in these cases is the treatment to the cure.

As is well known there are three clinical forms of epilepsy which have been recognized long since. They are:—

- (1) Petit Mal.
- (2) Grand Mal.
- (3) Jacksonian Epilepsy.

1. The recognition of cases of Petit Mal, although at times is simple enough, is sometimes very difficult. The conditions that simulate Petit Mal are:—

- (1) Syncope.
- (2) Vertigo due to Meniere's disease.

* Specially contributed to *The Antiseptic*.

- (3) Vertigo due to cerebellar or Pontine disease.
- (4) Cardiac lesions such as Stokes Adams' disease.
- (5) Vertigo due to indigestion, either gastric or intestinal.
- (6) Goitre.

In all these conditions, except perhaps the 4th, there is no complete loss of consciousness, while on the other hand, epilepsy is characterized by complete loss of consciousness with or without convulsion according as it is Grand Mal or Petit Mal. The chief element is the loss of consciousness in epilepsy and not the convulsion. In syncope and vertigo due to Meniere's disease and cerebellar and Pontine disease, there is no complete loss of consciousness while, on the other hand, the associated symptoms give a clue to the diagnosis.

(3) Next we come to an important group, the cardiac lesions, such as Stokes Adams' disease or heart-block, which produce syncopal attacks. Although to go into the etiology and pathology of this condition will be wandering away from the subject, a word about its description will not be out of place. It is a disease seen in the elderly people, specially those with thickened and degenerated arteries and characterized by degeneration or disease of the auriculo-ventricular bundle of His. Clinically it presents three symptoms.

- (1) Slow pulse even up to 30 or 40.
- (2) Venous pulse in the neck.
- (3) Cerebral symptoms such as syncopal, apoplectiform or epileptiform attacks.

So although the syncopal attacks may simulate Petit Mal or the epileptiform seizures, Grand Mal, the associated symptoms such as slow pulse, venous pulse in the neck, palpitation and oppression at the heart will point to the heart. Undoubtedly, all the classical symptoms are not present in every case, but still the diagnosis is not very difficult in every case. Last year I had a case of Stokes-Adams' disease. The patient was a middle-aged man of about 45, well built and well nourished. He gave history of fits. The syncopal attacks exactly simulated Petit Mal fits and the man used to fall down unconscious for a few minutes. The man was so fat that physical examination of the heart would reveal nothing. Inspection was negative. On palpation the apex-beat could not be felt. On percussion the cardiac dullness could not be defined; in fact it had almost disappeared. On auscultation the ventricular sounds could not be heard; probably it was beating behind a rib, but the left auricular systole could be heard in the 2nd left interspace on careful listening. This is in accordance with the pathology of the disease which teaches us that

owing to disease of the auriculo-ventricular bundle of His the auricular contractions are passed intermittently on to the ventricles. But the patient had a pulse of 40 which was the only clue to the diagnosis.

5. In vertigo due to indigestion there is no loss of consciousness while the symptoms of indigestion are present, and the course is of short duration.

6. In goitre, be it exophthalmic, cancerous, fibroid, adenoid, fibro-adenoid or fibrocystic, there are syncopal attacks, specially in the first two due to the pressure of the enlarged thyroid on the carotids and consequent cerebral anæmia.

The diagnosis of Grand Mal is equally complicated, and as treatment varies according to the nature of the convulsions, the early diagnosis is of great importance. The conditions which simulate Grand Mal most closely and occur very frequently are:—

- (1) Uræmic convulsions.
- (2) Lead.
- (3) Beginning of general paralysis of the insane.
- (4) Hysteria.
- (5) Eclampsia.
- (5) Tetanus and Strychnine poisoning.
- (7) Infantile convulsions.

In epilepsy, the suddenness of the attack, complete loss of consciousness, foam at the mouth, relaxation of the sphincters and the cry are distinctive.

1. Uræmic convulsions are recognized by increased tension of pulse, changes in the urine, sometimes albuminuric retinitis, thickened arteries and smell of the breath.

2. In convulsions due to lead or lead encephalopathy, in addition to the history that the patient comes from a lead-manufacturing district, there will be colic, wrist-drop and blue line on the gums. All these conditions may be present or only one or two of them, in addition to the convulsions.

3. The third group comprises those cases of convulsions, in which that symptom is the signal symptom of commencing G. P. I. The patient may have only one or repeated convulsive seizures and these cases are sometimes very difficult to diagnose. The chief indications on which to rely are, that while epilepsy begins in early adult life or boyhood, general paralysis of the insane begins a little later. In G. P. I. there is a peculiar stolidity about the face. While speaking, there are

twitches of the facial muscles, and trembling of the tongue and lips. There is hesitancy in speech, irritability, restlessness, sleeplessness, exaltations of ideas and personal grandeur may also be present. Ocular changes such as inequality of the pupils, Argyll-Robertson pupil or optic atrophy may be present. Syphilitic history is sometimes present.

(4) The separation of hysterical cases from true epilepsy is sometimes very difficult. As a general rule, however, the onset in hysteria is gradual and is caused by an emotion; there is no biting of tongue, no relaxation of sphincters; the back is arched and the limbs are thrown about more violently. In addition, in hysteria the patient very often is not completely unconscious though sometimes, but rarely, she may be so. The duration of an attack is longer, *viz.*, more than 10 min.

(5) Though the convulsions of eclampsia may resemble epileptic convulsions to a certain extent, the relation of the former condition to pregnancy at once separates that class.

(6) In tetanus and strychnine poisoning, although there are tonic and clonic spasms, the history, course and duration are entirely different to those of epilepsy.

(7) Now we come to an important group of cases, *viz.*, Infantile convulsions. This group of cases can sharply be defined from those of true epilepsy.

(8) Their onset in childhood and their depending on some peripheral irritation are the distinctive points. That the convulsions depend upon the peripheral irritation is shown by the fact that as soon as the source of irritation is removed, the convulsions cease. The most frequent sources of irritation are phimosis, stone in the bladder, worms in the intestines, indigestion, teething, otitis, adenoids, &c. The onset of an infectious disease is very often ushered in by convulsions in children. Rickets and debility are the frequent causes in a great majority of cases.

In the preceding paragraphs I have endeavoured to make the diagnosis of epilepsy clear and to give a classification of the various simulating maladies though admittedly imperfect. Now just a word about the treatment. The treatment of epilepsy is divided into dietetic and medicinal.

Diet and hygiene.—The old writers laid great stress upon diet and hygiene in the treatment of epilepsy. That climate and personal hygiene have a certain influence is shown by one of my cases. An Englishman, who went on the South African war, developed traumatic epilepsy there

after some accident for which he was trephined and a plate put in. He was free from convulsions as long as he was in West Africa for nearly four years but the fits began to recur as soon as he returned to England, although his work here was in no way greatly different from what he used to do in West Africa.

Every possible hygienic means should be taken to promote general health, especially by fresh air, cold or sea bathing, sufficient but gentle exercise and change of scene. A sea voyage is thus of great benefit. Alcohol should be stopped as, in addition to the fact that alcohol itself may be the cause of epilepsy in some cases, it may precipitate an attack by producing relaxation and consequent congestion of cerebral arteries. The diet should be nourishing but simple. In former days physicians were greatly in favor of vegetable diet which undoubtedly showed good results in good many cases and still it may be given in suitable cases. In the National Hospital for the Paralytics here, the patients are kept on mixed diet, although nitrogenous food should be given as little as possible. Meat is allowed only once a day, namely, in the afternoon dinner.

Beef, pork, ham, veal and bacon should not be given. Ducks are also prohibited. Mutton, chicken, fish, &c., are the chief nitrogenous food-stuffs. The amount of salt in the diet is an important question discussed by many. Now-a-days authorities admit the importance of giving a moderate amount of salt. Salt-free diet in which Sodium Chloride is replaced by Sodium Bromide is also very often tried with varying success.

Of the medicinal remedies, Bromides and preparations containing bromides are the best remedies as far as is known at our disposal. Some practitioners give it in small doses three times a day, while others prefer to give it in one big dose only once a day. If given once a day it should be given in drachm doses about six hours before the expected attack. If it disagrees with the stomach, it should be given diluted with a large quantity of water. It should be begun with small doses and gradually increased. Treatment should be continued till about two years till after the fits cease. In cases in which Bromides are not successful it is better to add a little Belladonna, which acts in two beneficial ways. First Belladonna is a depressant to the ganglion cells of the motor cortex; so it checks their activity, and secondly, as nocturnal epilepsy is due to deficient oxygenation of the blood, Atropine which is the alkaloid of Belladonna stimulates the respiratory centre in the medulla and increases the oxygenation of the blood.

For the same reason Digitalis, Strophanthus and drugs belonging to this class may be added to the Bromide with advantage. In very obstinate cases, opium in 5 gr. doses three times a day may be given for three weeks followed by a course of Bromide. Nitroglycerine is sometimes very effectual in Petit Mal. It may be given in 2-3 min. doses of 1 % sol. till the physiological effects are produced. Other remedies to be tried are Chloral Hydras Zinc compounds, Cannabis Indica, Borax, Valerian, &c.

I want to lay stress on a special form of epilepsy beginning at or a little over 30. These cases, unless due to trauma, are very often syphilitic in origin. So a vigorous antisyphilitic treatment is the only way of cure in these cases.

In cases of epilepsy in which there is definite and constant aura such as for instance, arising from the finger, hand or toe, a ligature placed on the proximal side, sometimes stops the oncoming fit.

Now a word about the surgical treatment of epilepsy. Surgical treatment is effective in three groups of cases:—

(1) In idiopathic epilepsy, if the fits start constantly from a certain region,—finger, or thumb for instance—the centre controlling this part must be removed and this treatment is very effectual in this country as well as in America.

(2) Traumatic epilepsy following fractures.

(3) Jacksonian epilepsy due to some intracranial neoplasm.

In some cases of epilepsy, any operation on the body, for instance castration, curetting, tracheotomy, &c., has stopped the fits. The failure in some cases after the operation is, I believe, due to the irritation of the cicatrix formed after the excision of the portion of the brain. The plan of replacing the trephined portion of the skull practised in the last hemi-decade is not followed now after trephining.

* TUBERCULIN IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.

BY

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Nearly 30 years ago Koch proved to the scientific world that the tubercle bacillus is the sole cause of Tuberculosis. Hence the presence of these bacilli in any focus or in any discharge from such foci, is

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acknowledged to be an indisputable proof of the tuberculous nature of the disease. It is not always easy or even possible to find those bacilli in some of the various forms and stages of the disease. As it is almost impossible to detect tubercle bacilli in the early stages of Pulmonary Tuberculosis and as an early diagnosis of the disease is essential for the successful treatment and termination of the disease, both from a private and public point of view, it is desirable that any means which would facilitate early diagnosis of Tubercle in its various forms, must be welcomed by the profession.

Till recently, only two methods, which were of assistance in the diagnosis of Tuberculosis, besides the microscopical test, were in vogue, viz:—

- (1) The method of agglutination of the homogeneous tubercle bacilli culture of Arlong—analogous to that of Widal in Typhoid.
- (2) The reaction got by the subcutaneous injection of Koch's tuberculine.

Of these, the first is imperfect and the other is impracticable, though most reliable, for the majority of patients in our country won't condescend to undergo such a test. Hence the necessity of considering other methods which have come into use. They are:—

- (3) The cutaneous test of von Pirquet.
- (4) The percutaneous test of Moro.
- (5) The conjunctival test of Wolff Eisner and Calmette.
- (6) The opsonic of Wright.

Of these, the two most in general use are the cutaneous and the conjunctival tests. Let me now proceed with the technique of these two methods in detail.

First, let me consider the different Tuberculins. They are:—

- (i) Koch's original Tuberculin.
- (ii) Koch's old Tuberculin.
- (iii) Tuberculin Residum or New Tuberculin, T. R.
- (iv) Bacillary Emulsion or Koch's new Tuberculin.

(i) *Koch's Original Tuberculin*:—It consisted of a concentrated glycerine bouillon culture of T. B. in which the bacilli had been killed by heat. Its essential components probably were the dead and often macerated bacilli and the substances indestructible by boiling which existed in these bacilli, or which were formed during their growth. It was this that was used in the first era of Tuberculin therapy.

(ii) *Koch's Old Tuberculin* :—Bacilli from young virulent cultures are dried 'in vacuo,' and disintegrated, treated with distilled water and centrifugalised; and the clear fluid was decanted and called T. O. This gives no precipitate with glycerine. Hence Koch assumed that it contained all the substances originally contained in the glycerine bouillon extract, originally used by him. This is used only for diagnostic purposes.

(iii) *New Tuberculin T. R.* :—After the extraction of T. O., the remaining deposit of bacilli is again dried, ground, treated with water and centrifugalised, the clear fluid being again decanted, and this process is repeated with successive residues till no residue remained. These fluids put together constitute the Tuberculine T. R. This, unlike T. O., gives a precipitate with glycerine. This is used for therapeutic purposes.

(iv) *Bacillary Emulsion or Koch's New Tuberculin* :—This is an emulsion of ground tubercle bacilli in water containing 50 per cent. of glycerine. It thus really contains both Tuberculin T. O. and T. R. This is used for therapeutic purposes and, in my opinion, it is better than T. R.

The Cutaneous Tuberculin Test :—The method of procedure is just like that of ordinary vaccination. An ordinary lancet is quite enough for the purpose; but if you don't mind the cost, it is better to use von Pirquet's inoculation needle. The tuberculin preparation used is Koch's Old Tuberculin. In the beginning von Pirquet was using a 25 per cent. dilution of T. O. As in most cases, it necessitated the repetition of the test and the use of a stronger solution to get a positive reaction, he now prefers the undiluted Tuberculin O. It is better to try the 25 per cent. in children and the undiluted only in adults. The best site for inoculation is the inner aspect of the fore-arm, both because of its delicate and less hairy skin and the ease of observation.

The skin is first prepared by rubbing with ether. Then a drop of sterile salt solution is placed about the middle of the prepared fore-arm; and a drop of Koch's T. O. (human) is placed about 2 inches above the first drop and a drop T. O. bovine variety is placed about 2 inches below. Then scarification is made either with the lancet or von Pirquet's needle first in the region of the sterile salt solution drop and then in the other two drops. The central drop serves as a control. The most favourable time for a single revision of the inoculation is after a period of 48 hours.

In interpreting the reaction, a distinction must be made between—

- (a) The traumatic reaction arising from the scarification itself, and
- (b) The positive cutaneous reaction.

The redness and the slight inflammatory swelling due to the scarification arise within a few minutes both at the site of control and the inoculated spots. But these soon fade away at both the places, whereas the positive cutaneous reaction has a latent period varying from 3 hours to a few days. In most cases it is well developed after 24 hours and is most distinct after 48 hours. The inflammatory reaction caused by the specific action of the tuberculin, consists in hyperæmia and exudation, and appears as a slightly raised reddening, starting from the roughened spot of skin and increasing rapidly in extent and height which varies in different individuals. On the average, the inoculation papule is about from $\frac{2}{3}$ to $\frac{1}{2}$ an inch in diameter; and rarely even of one inch. The edge of the papule is circular or irregular, or it may be rendered indistinct by small follicular swellings on the margin and in intense reactions it is surrounded by a flat, slightly reddish brown areola. The maximum of the reactive signs is generally reached 48 hours after the inoculation, after which time the exudation decreases and the redness fades and only a pigmentation may be visible for some weeks.

The Conjunctival Tuberculin Test :—Since Wolff Eisner was the first to mention the possibility of a local conjunctival reaction to Tuberculin and Calmette first drew attention to the diagnostic significance of the phenomenon for human Tuberculosis, it would seem right and fair to couple the test with the names of both the authors. Hence we may call it the conjunctival reaction of Wolff Eisner and Calmette. The best, cheapest and the most trustworthy preparation for the test is Koch's old Tuberculin, diluted for instillation. With regard to the strength of the fluid for instillation, it is recommended for the first instillation, in the adult, a 1 per cent. dilution and on repetition 2 to 4 per cent., $\frac{1}{2}$ to 1 per cent. being used for children.

The instillation is most likely to succeed when the patient sits on a chair inclining the head somewhat backwards. The operator, standing a little to the side and in front, draws down the lower lid, lets the drop fall gently into the lower conjunctival sac and holds the lid retracted for about half a minute, so that the conjunctiva is well bathed with the solution. Then the hold on the lid is removed and the patient asked to remain a moment longer looking up without closing the eye.

The reaction may begin in from 4 to 6 hours but generally it does after 12 to 24 hours and reaches its acme in 24 to 36 hours. The positive reaction consists in an inflammatory irritation of the conjunctiva of which we can distinguish three grades, *viz.* :—

- (1) Reddening of the caruncle and the palpebral conjunctiva.
- (2) Intense reddening with involvement of the ocular conjunctiva and increased secretion.

[These are the two degrees of reaction which I noticed in my cases.]

- (3) Intense reddening of the whole conjunctiva with chemosis and much fibrinous and purulent secretion.

This test is contra-indicated in diseases of the eye and in infants.

The percutaneous Test of Moro:—It consists in the absorption of tuberculin through the unbroken skin. Tuberculin ointment consisting of equal quantities of Koch's T. O. and anhydrous lanolin is rubbed for about half a minute over two inches square of skin. Here you will notice, in marked reactions, papules indistinguishable from those of cutaneous reaction.

The Subcutaneous Tuberculin Test of Koch:—It consists in the hypodermic injection of a certain quantity of Koch's T. O. A positive reaction is manifested by—

- (1) A local reaction at the site of injection.
- (2) A febrile reaction.
- (3) A general reaction evidenced by subjective symptoms, and
- (4) A focal reaction at the site of tuberculous infection. This is the specific, and therefore valuable sign of this test.

So that if this test is employed the lungs must be carefully examined for the appearance of crepitations, etc., and the sputum should be carefully searched for T. B.

How is the occurrence of the reaction to be explained? In all subjects infected with tuberculosis a substance is present which is able to set free, out of the fragments of tubercle bacilli in the tuberculin substances, poisons which produce tuberculin reaction. The phenomenon is a combination of lysis of the bacterial fragments and of the action of the poisons set free on the body. This action varies according to the grade of hyper-susceptibility, and is different in different subjects, according to the reactive ability present at the moment.

The reaction is not obtained in advanced cachectic cases possibly because all sense of the cell to the stimuli to react and resist is lost. Such

cases are of bad prognostic value. The following two factors must be borne in mind:—

(1) A positive reaction only points to the presence of a tuberculous focus in the body without giving information as to the active or inactive character of such a focus.

(2) A negative reaction does not prove the absence of active tuberculosis.

"It is very important that these limitations of the tuberculin diagnosis should be fully recognised. A positive ophthalmo-reaction, cutaneous tuberculin reaction, or subcutaneous tuberculin test, by itself cannot distinguish between active and inactive tuberculosis, between tuberculosis which calls for treatment and that which does not. The only rational way of using such tests is to make them but one of the many factors which have to be taken into consideration when deciding on the important question as to the advisability or not of a course of treatment which usually is lengthy and costly. Highly trained clinical experience is as necessary to-day as ever it was for helping us in diagnosing Tuberculosis."

Treatment:—The therapeutics of tuberculosis, based on the etiology, begin with the discovery of Koch of Tuberculin. Robert Koch in a series of experiments on guinea pigs found that if a healthy guinea pig were inoculated with a culture of live T. B. the animal died within a period of from 4 to 6 weeks. Whereas another guinea pig which was previously inoculated successfully with a minimum dose of the culture, did not die when inoculated with the same dose of the culture as in the case of the first one, but escaped with only local ulceration and necrosis of the part. Koch next prepared a concentrated glycerine bouillon culture of T. B. in which the bacilli were killed by heat. He found that by injecting small quantities of this, animals already infected with tuberculosis and men affected with lupus showed marked improvements. Thoroughly impressed with the efficiency of this method of treatment, he advocated it in the early stages of the disease. The profession, however, took to this eagerly, forgetting Koch's limitation and began to administer it in much advanced cases even in increasingly high doses. The inevitable result of the heroic treatment was that in most cases the infection became generalised and many patients died of this treatment.

Koch's idea was that the introduction of Tuberculin facilitated and hastened the necrosis of the spreading margin around the tubercular focus and the expulsion *en masse* of the material containing the

living and dead bacilli, instead of acting directly on them. It is now admitted that this is an erroneous idea.

To understand the action of Tuberculin correctly it is necessary for us to know the physiology of immunisation, for in fact the process of tuberculin therapy is one of active immunisation. I adopt Ehrlich's theory of immunisation. Ehrlich assumes that every living cell is a complex molecule composed of a central atom or executive centre with a number of side chains or atoms with affinities for assimilating foodstuffs. It is by means of these side chains that the cell is increased in the process of nutrition—hence the name "receptors" is given to them. In the case of toxins, when introduced into the system, they are fixed by their haptophorous group to the "receptors" of the cell protoplasm. If they are of sufficiently large doses, the toxiphorous part of the toxin molecule produces that disturbance in the protoplasm which is shown by the symptoms of the respective poisoning. In small doses, fixation to the protoplasm occurs in the same way as before and as the combination of the receptors with the toxins is supposed to be of a firm nature, the receptors are lost for the purpose of the cell and the combination "receptor-toxin" (R. T.) is shed off into the blood. Receptors thus lost are replaced by new ones. As the result of repeated losses of receptors, there is an over-generation of them by the cells and those formed in excess are cast off into the blood. These free receptors constitute the anti-toxin molecules. There are thus three factors in the process, *viz* :—

(1) Fixation of toxin.

(2) Over-generation of receptors.

(3) The casting off of free receptors into the blood stream.

When a minimum dose of tuberculin (which I shall indicate presently) is introduced into the system, it first produces what is called the negative phase, *i. e.*, a period of lessened resistance. This is because the extraneous toxins contained in the Tuberculin are fixed by the cells. Following this period there is what is called a positive phase corresponding to the period of circulation in the blood of free antibodies. When these are used up we come to the same phase of resistance as at the start. Hence the necessity of repeated injections.

The aim of the modern method of treatment is to produce a very short or almost inappreciable negative phase by injecting minute doses of Tuberculin to begin with, and to repeat it in gradually increasing doses while the positive phase is still on.

There are at present two schools in Tuberculin Therapy.

(1) The English followed by Wright, the pioneer of vaccine Therapy, is to gauge the amount of negative phase by ascertaining the opsonic index of the patient prior to each injection. This method is not practicable both for want of facilities and the willingness of the patient and so need not be considered here.

(2) The German and certain section of the English school determine the dose by watching the clinical symptoms. Briefly, if after a dose there is increase in pulse rate, temperature, and loss of weight, we reckon an over-dose is administered.

To begin with, the minimum dose to be administered hypodermically in apyrexial cases is 1/10,000 of mgrm. of dried tuberculin substance in 1 c. c. of the bacillary emulsion or T. R., gradually increasing the dose to 1/1000 of mgrm. Most of the continental advocates begin even with 1/1000 and go up to $\frac{1}{2}$ or 1 mgrm. But in my experience patients here do not tolerate a dose of even 1/500 or 1/100 of mgrm. Some of my cases where there was no reaction after an injection of 1/1000 mgrm. showed marked reaction with 1/500 dose. I keep up 1/1000 dose when I reach it till the end of the treatment which is usually of 3 to 6 months. It is advisable to begin with only 1/1000,00 dilution in weak patients and in pyrexial cases. If after an injection there is reaction resulting in fever and burning of eyes, it is inadvisable to repeat it until the temperature comes down to what it was before the injection. In cases where patients cannot or do not like the hypodermic method of treatment, Tuberculin can be administered orally as advocated by Latham.

The cases most benefited by the Tuberculin treatment are the localised cases of tuberculosis such as tubercular glands, tubercular affections of the serous membranes like pleurisy and peritonitis and the apyrexial cases of pulmonary tuberculosis.

The administration is contra-indicated in progressively advanced cases of P. T. marked by profound wasting and hectic fever, and also in advanced cases which do not react to the tuberculin diagnostic tests, as in such cases all response to the stimuli of immunisation is lost. In cases of fever which is said to be a contra-indication, it is necessary to know whether it is due to the primary disease or a secondary infection with pyogenic cocci. In the latter event it is no contra-indication and in such cases the vaccine of the cocci isolated from the patient may be advantageously employed along with tuberculin.

I have tried to the best of my poor abilities to invite the attention of the profession to the specific treatment of tuberculosis. Experience

of medical men both in England and Germany has established Tuberculin Therapy on a sound basis, and in the suppression of one of the most dire and dangerous affections which has been claiming countless numbers, Tuberculin Therapy ought to play a very large part in the days to come. Of course there have been miscalculations and misunderstandings in the early employment of it which have produced ill-effects and which have furnished a handle for the adverse critics of the Tuberculin Therapy. But these need not deter us as a correct diagnosis and careful treatment should certainly place Tuberculin Therapy on an unassailable position in the near future for the achievement of the health and happiness of humanity, a seventh, if not more, of which are now the victims.

• THE TÆNIA SOLIUM AND CYSTICERCUS CELLULOSÆ IN MAN.

BY

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(Continued from p. 18, "The Antiseptic", January, 1911.)

Prophylaxis.

1. Proper system of conservancy and night soil disposal. Institution of good latrines for all the lower classes and preventing people to deposit their excreta anywhere and everywhere.
2. Institution of good water supply, taking precaution so that the water is not defiled in the banks of reservoir tanks or in their transit channels.
3. Supervision over the condition and housing of swine. Pigs are to be kept in a cleanly way, fed in styes and not allowed to the privies and dung heaps.
4. Supervision over the sale of measly pork by qualified sanitary inspectors.
5. To insist on the personal hygiene of the individual who is the host of Taenia. He being a source of dangerous infection to the other inmates of the house, special care ought to be taken as to his cleanliness. The person affected with cysticercus cellulosæ (intermediary host) is usually one who lives in the same room as the man suffering from Taenia Solium (definitive host.) This is a very interesting point and notice should be taken of it in prophylaxis. Therefore his excre-

Specially contributed to The Antiseptic.

ment ought to be burnt, linen disinfected, and hands frequently washed, as he is in great danger of infecting himself as well.

6. The tapeworm patient must be removed at once from the vicinity of swine, as he can infect the whole brood.

7. Insisting on the proper washing and boiling of all vegetable food before they are eaten.

The Symptoms of Human Cysticercus Cellulosæ.

I do not propose to deal here with the symptoms of Taenia Solium in man, its diagnosis and treatment, as they are all well-known. Confining myself to the symptoms of cysticercus cellulosæ in man, I must say that they are as varied as their situation and number. Depending on the numbers and locality specially affected, the symptoms are grouped into general, cerebrospinal and ocular by Osler. In the subcutaneous and intramuscular connective tissues they may occasion not the slightest disturbance and even though they may persist for a great number of years, they may in the end become shrunken and calcified. When they are in the subcutaneous tissues which are subjected to pressure, they get inflamed and suppurate. There is a slight decrease of strength in the muscles affected, but nothing more is complained of. Lancereaux reports a case where over a thousand could be felt subcutaneously.

In the heart they may occasion serious consequences, such as, palpitation, and, when in the valves, valvular insufficiency or stenosis. The visceral cysticerci have hardly any distinctive pathological effects.

In the eye, when it is present in the outer parts, there is nothing serious, but dangerous consequences ensue, when they are inside it. Iritis, irido-cyclitis, choroiditis, detachment of the retina and in some cases panophthalmitis have been occasioned by their presence.

Still more serious are those cases of cerebral cysticerci. There may be only slight troubles, such as headache, lethargy, fatigue and giddiness. But serious troubles usually result, as epilepsy, paralysis, hemiplegia, physical disorders, cramps, tremors and mental disturbances, as mania and melancholia. In Leuckart's opinion the cysticerci in the brain are of fatal significance, not merely because of their presence but also because they soften the surrounding nervous substance and lead to hæmorrhage and other diseases, such as meningitis, hydrocephalus, apoplexy, etc., which again produce other serious disorders.

Symptoms of Cysticercus Cellulosæ in Swine.

It is interesting to know what symptoms are produced in swine by their presence, although the association of man and the pig and the com-

parison or contrast may be undesirable and unwelcome. But the true scientific spirit ignores mere sentimental objections to discussion before educated people. The pig does not seem in the least disturbed by the ordinary infection of the muscles and connective or subcutaneous tissues. Neither do the visceral cysticerci occasion severe trouble. In extreme cases they are said to cause cachexia, emaciation and death. When excessively infested, it becomes dull and melancholic, according to Turin, quoted by Leuckart. Weakness, paralysis and paraplegia ensue. When they occur in the brain, as in man, they give rise to cramps, madness or paralysis. But, on the whole, the pig does not suffer from their effects so much as man, in whom, as I have already mentioned, a preference is usually shown to the cerebral cortex and eye. Osler is of the same opinion. "In the hog the cysticerci produce very little disturbance. The muscles, the connective tissue and the brain may be swarming with the measles, yet, nutrition is maintained and the animal does not appear to be seriously incommoded." This affection of the hog should not be confounded with the staggers of the sheep and oxen, due to the *cœnurus*, the cysticercus of the *taenia cœnurus*, which similarly shows a preference to the brain and produce cerebral disturbances, known popularly as the 'Gid.'

History of some Interesting Cases.

A case is mentioned by Cobbold of a man, walking in the street, falling down dead, in whom a cysticercus was found in the pons varolii during the post-mortem examination.

He records also the two following cases.—"Mr. Ottley gives the case of a woman, aged forty, where an undoubted cysticercus gave rise to distressing fits, convulsions and death. Dr. Burton's work-house patient, aged 20 years, was found dead in bed; but at the time of admission only complained of pain in the head. After death four cysticerci were found in the Tuber. Ancillaræ at the summit of the spinal marrow."

To Van Beneden I am indebted for the following case.—"We have lately read an account of the effects produced by one of these wandering worms on a man who died after suffering from a peculiar disturbance of the mind. Two spirits seemed to haunt and speak to him, the one a German and the other a Pole. Filthy images were called up before his imagination. At the post mortem examination, cysticerci were found to occupy the Sella Turica near the commissure of the optic nerves. One of these was alive, the others were calcified. Two others in a similar condition occupied a lobe of the brain,"

To give an illustration of the general symptoms produced, Osler records the history of a man admitted to his wards, very stiff and helpless, so much so that he had to be assisted upstairs and into bed. He complained of numbness and tingling in the extremities and general weakness, so that at first he was thought to have peripheral neuritis. When examined, a number of painful subcutaneous nodules were discovered, which proved on excision and microscopical examination to be cysticerci. Subcutaneously seventy-five were felt and to account for the severe soreness and extreme rigidity, large numbers of them were, probably, present in the muscles. He complained of no ocular or cerebral symptoms.

Osler records also the case of a patient in whom during the life there had been symptoms of diabetes and anomalous nervous disturbances and whom had a cysticercus, beneath the valve of vicussens, pressing upon the floor of the fourth ventricle, which was revealed at the post mortem examination.

Mr. C. Koman, L.M. & S., Assistant Professor of Chemistry, Madras Medical College, has kindly furnished me with the following history of a very interesting case he had at Salem in August 1896. The patient aged about forty, a Malayali, a member of a class of hill tribe who live on the slopes of the Shevaroy, exhibited the following symptoms—extreme emaciation; tremors of the head, upper and lower extremities; congestion of the conjunctiva of both eyes and chemosis; rigidity of the muscles of the trunk and extremities; frequent attacks of fainting fits and momentary loss of consciousness, the fits being at times epileptiform; incoherent speech; and ataxic gait. He had, curiously enough, no paralytic symptoms. He died about a week after admission into the hospital. At the post-mortem examination hundreds of cysts of the size of a pea were found in the grey matter of the cerebrum. The ventricles were free. The trunk muscles, eyes and internal viscera were not examined. I am of opinion that this patient must have had numerous cysticerci in his muscles to account for their rigidity and at least one or two in both of his eyes to explain their congestion and chemosis, unless these resulted from pressure on the cavernous sinuses by the cerebral cysticerci. The cysts in this patient were confirmed to be cysticercus cellulosæ by the late Major A. E. Grant, I.M.S.

A case of cysticercus cellulosæ of the brain in a native cooly, aged 33 years, sent to the Madras Asylum as a criminal lunatic from Nellore jail, has been recorded by Surgeon H. Armstrong. He had epileptic fits and died of exhaustion. The post-mortem examination revealed active inflammation of the meninges of the brain and small cysts studded

over the cerebrum and cerebellum. There were a few cysts in the ventricles of the brain, two on the pleura of the right lung, rather a rare situation, and one in the left ventricle of the heart. I have no doubt that the cysticerci were the cause of the mental condition of the patient.

To show that in rare instances cerebral cysticerci excite no head symptoms, the following case recorded by Major C. L. Williams, M.D., will serve as an excellent example. The patient, aged 45 years, died of pneumonia in the Coimbatore jail. There was a cysticercus cellulosæ in the outer part of the left corpus striatum, about the size of a small pea, yellowish, suppurating and inclined to dry up, containing one head.

DIAGNOSIS.

Osler is of opinion that, except in the eye, diagnosis can rarely be made, but when they are subcutaneous, one might be excised and examined microscopically. Cobbold tacitly admits the impossibility of correct diagnosis during life of cysticerci in the brain alone. Griesinger states that the epilepsy due to cysticercus exactly resembles cerebral epilepsy and there is nothing characteristic of the psychical disturbances.

Of course easily demonstrable by the aid of the ophthalmoscope are the ocular cysticerci. By its help even the motion of the worm enclosed in its brownish bladder can sometimes be seen. Those in the subcutaneous and connective tissues as well as those in the tongue, lips, cheeks, &c., can be diagnosed by excision and microscopical examination. Whenever a patient presents obscure and indefinite cerebral symptoms and psychical disturbances, if he has palpable cystic tumours in any part of his body, to excise and examine them microscopically is our bounden duty, as the possibility of cysticerci must be borne in mind. Even a single cyst present will be of great diagnostic value. In the patient whose case has been reported in detail, the cyst in the cheek, if it had been excised with a local anaesthetic and examined microscopically, might have provided a correct diagnosis of the disease during life. In the absence of such diagnostic swellings which can be made use of nothing can be done, except treating the patient symptomatically with some provisional diagnosis, until some signs turn up to make it positive.

About the difficulty in diagnosis Leuckart too writes: "Without further proof, such as primarily the direct demonstration of bladder worms in the eye or under the skin, the true nature of these troubles could hardly be determined with certainty. Since without further evidence it is difficult to be sure of their presence in the brain at all, it must be even more difficult to determine the position and distribution of these worms." The case, reported in detail at the beginning, leaves this im-

pression on me that the slightest things, which for a superficial observer however, may be least important, are often of great value for an accurate diagnosis for him, who knows how to use them to advantage.

Captain A. C. Ingram, M.D., I.M.S., wisely suggests that the precipitin and complement fixation methods of diagnosis, which have been successfully applied to hydatids, may probably prove equally successful to patients infested with cysticercus cellulosæ.

Prognosis and Treatment:—When few and superficial or in accessible parts of the body, not only for the purposes of diagnosis, but also as a radical cure, the cysts can be excised, though their absence from other parts of the body, the internal viscera and inaccessible places, as the brain, cannot be positively assured, as they may after a time develop to produce irritative or pressure symptoms. But unfortunately such cases, however, are extremely rare.

This is well illustrated by the case recorded by Major C. L. Williams. The patient was a convict in the Madras Jail and by profession was a basket-maker. He complained of a swelling in the tongue which was cystic and about the size of a hazel nut, the duration of the tumour being about a month; it was situated on the under surface of the tongue and on its left half near the tip. It shelled out easily during operation and on examination proved to be a cysticercus cellulosæ. This same man is stated to have shown some time later a cyst in his thigh which disappeared of itself and again after a time a cyst of four or five months' duration above one elbow, but the exact periods between the dates of appearance of these different cysts have not been given. In addition we do not know the cause of death in the patient later on. It would, probably, have been of great interest, if these points were known. Thus the cysts in accessible places can be removed and the prognosis, so far as these are concerned, is good; but we can never be certain that more cysts will not develop in other parts of his body, even though future infection is guarded against.

Those in the eyes, if superficial, can be completely excised and the eye saved. But, when they are found in the deeper parts of the eye, brain or heart, at the present state of our knowledge, even when a positive scientific diagnosis has been made, little can be done. Anthelmintics will positively expel the tæniæ from the intestines, but nothing can dislodge the visceral cysticerci nor is it possible to do so. Neither do we know at present any specific to kill these worms *in situ* and at the same time be harmless to the patient. Captain A. C. Ingram, M.D., suggests that so far as present methods of treatment are concerned, some form of specific immunity producing serum therapy directed towards killing all the

worms, so that the cysts may shrink down and cease to irritate the surrounding tissues may be found feasible, but that the condition is so readily preventible that prevention is likely to obviate the chances of elaborating such a method of treatment.

I shall conclude this short essay in the words of Leuckart: "As in so many other matters, we must look to the future, in expectation of a deeper insight into the anatomical and physiological facts of the case," to which I will add therapeutics.

I am very much obliged to Captain A. C. Ingram, M.D., I.M.S., for his kind help in the preparation of this essay, for his valuable suggestions in the diagnosis and treatment of this disease and for the permission given me to make use of the post-mortem notes; to Major R. H. Elliot, M.D., F.R.C.S., I.M.S., for his kindness in showing me his case of *cysticercus cellulosæ* of the eye in the ophthalmic hospital and allowing me to examine him thoroughly; to Major C. Donovan, M.D., I.M.S. for having allowed me to publish the history of the patient who was under his care in the General Hospital; to Mr. Koman L.M.S., for having furnished me with a report of his interesting case of multiple *cysticercus cellulosæ* of the brain.

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Our Contemporaries.

MEDICINE.

Acute Hæmorrhagic Encephalitis following Influenza:

NUMEROUS MICROBES IN THE HÆMORRHAGIC AREAS.

Byrom Brainwell, M. D., F. R. C. P. (Edin.)—A married man aged 31, a cabinet-maker, was seen in consultation on Apr. 29, 1908. He was a teetotaler and non-smoker and denied syphilis. He had been perfectly healthy until Apr. 9, when he left work for 5 days with a cough and chill, thought by his doctor to be influenza. He returned to work on Apr. 15, but on Apr. 26 he left work again for 2 days with a slight attack of acute laryngitis. On Apr. 28 he felt quite well and intended to return to work, but as it was a cold stormy day he thought it better to remain at home. He ate a hearty dinner at 12.30 P.M. While sitting over the fire after dinner he was seized with intense headache, vomiting, and slight shivering. The pain was felt over the whole of the head, back and front, but was worse on the left side. At 2 P.M. his temperature was 102° and pulse 124. He complained of intense headache and vomiting. There was nothing to account for the headache. The pupils, reflexes, and various organs appeared to be normal. On the morning of Apr. 29 the temperature was 99° and the pulse 80. He still complained of severe headache and vomiting. About mid-day he began to lose power in the right arm, and complained of numbness and tingling on both sides of the body, worse on the right side. The loss of power rapidly extended.

When the writer saw him at 4.30 P.M. the right side of the body (face, arm and leg) was completely paralysed, and he was unable to speak (complete motor aphasia). He was quite sensible and understood what was said to him. He put out his tongue when told to do so, and when asked to raise the right arm lifted it with the left. The temperature was 102°, the pulse 120. He still complained of great headache, though less intense than before, worse on the left side. He still at times vomited. The right knee-jerk was exaggerated; there was a double extensor response; the pupils were equal, of medium size; they reacted actively to light and on convergence; the optic discs were normal. There had been no twitchings. There was no pain or stiffness in the neck; Kernig's sign was absent. There was no tenderness over the mastoids; the ears were normal. The heart and the urine were

normal. A few crepitant rales were heard over the bases of the lungs, but there was no dulness and no definite evidence of pneumonia.

He continued much in the same condition until the morning of Apr. 30, when he became semi-comatose, and was sent to the Infirmary. On admission the temperature was 103°, the pulse 110, the respiration 36, and the blood pressure 120. He was unconscious and breathing stertorously; his colour was ashen-grey; he was sweating profusely. The eyes were turned to the left; the right limbs were quite limp, the left arm somewhat spastic; ankle-clonus was present on both sides, and there was a double extensor response. Lumbar puncture showed nothing abnormal in the cerebro-spinal fluid. The coma gradually deepened, the temperature continued to rise, and he died at 10 A. M. on May 1—69 hours after the onset. Before death the temperature rose to 107°.

The diagnosis presented great difficulty. The patient was suddenly seized on Apr. 28 with severe acute general cerebral symptoms—intense headache, worse on the left side, vomiting, fever and slight shivering. After 24 hours there followed rapidly developing right hemiplegia and complete motor aphasia; also subjective sensory symptoms (numbness and tingling) referred to both sides of the body. A double extensor response, and, a little later, double ankle-clonus, were present. There were no symptoms of meningitis. Acute cerebral abscess seemed to be excluded—the ears were normal and no other cause could be detected. The case was clearly not one of embolism or ordinary cerebral hæmorrhage; the paralysis did not develop until 24 hours after the acute onset. The condition which seemed most likely was cortical thrombosis with cerebritis of the left hemisphere, but the absence of twitchings seemed strongly against this.

NECROPSY.—There was slight commencing septic bronchopneumonia in each lung. The spleen weighed 6 oz., and was soft and defluent but not enlarged. The kidneys were somewhat congested. The bone-marrow showed some spreading patchy leukoplasmic reaction. The membranes of the brain were healthy. The veins on the surface were somewhat engorged, particularly over the left hemisphere, which looked distinctly larger than the right, and was obviously swollen. On section the whole of the white matter of the left hemisphere was distinctly swollen, oedematous and congested. Innumerable small, purple, vascular points, which on microscopic examination were found to be minute hæmorrhages, were scattered throughout the left hemisphere, and partly throughout the right hemisphere, also

through the crura and pons. They were most marked in the posterior ends of the frontal, convolutions, and in the ascending frontal, ascending parietal and superior temporal convolutions, (the cortical area supplied by the middle cerebral artery), the subjacent white matter of the centrum ovale, the corpus callosum, the internal capsule and basal ganglia on the left side. The white matter of the right hemisphere adjacent to the corpus callosum was also involved. The hæmorrhages were very numerous in the crura cerebri and pons Varolii. The medulla oblongata, cerebellum, and spinal cord appeared to be perfectly normal. Cultures made from the brain were negative.

On microscopic examination the minute vessels of the brain were found much congested, dense aggregations of polymorphonuclear leucocytes were present in the adventitial spaces surrounding many of the medium sized arteries. The nervous tissues were in places extensively infiltrated by the same cell elements, and there were innumerable small recent extravasations of blood throughout the affected parts of the brain.

Dr. Ford Robertson examined parts of the brain and pons Varolii, and in the areas of hæmorrhage found numerous microbes which seemed to him to be a variety of streptothrix. Sections stained by Gram's method and by the Ziehl-Neelsen method show no microbes. In sections deeply stained with Löffler's methylene blue many straight or curved rods were revealed, especially near the hæmorrhage. In palladium methyl violet preparations these bodies were deeply stained. In another case of cerebral hæmorrhage in a woman, aged 43, Dr. Robertson found similar microbes. As the streptothrix is difficult to reveal it may have escaped observation in previous cases.

Acute hæmorrhagic encephalitis is extremely rare. The majority of cases seem to have developed after influenza, but in some cases the disease was preceded by measles, scarlet fever, pneumonia, erysipelas or other infection. There seems to be little doubt that the disease is usually the result of some microbic infection or toxin.—*The Medical Review*.

Mistaken Diagnoses

In a very instructive paper in the *J. A. M. A.* (Oct. 15th), Cabot analyzes 1,000 autopsies and compares them with the clinical findings, and his observations on the general result are most interesting. He finds, for instance, that they diagnosed mitral stenosis correctly in only

69 % of cases and aortic stenosis in 61 %. The errors in the latter condition lead him to the conclusion that aortic stenosis may exist despite the presence of an accentuated aortic second sound and a "water-hammer" pulse. In long-standing cases of "rheumatic" endocarditis, aortic stenosis is almost always present, whether there are physical signs or not. Aortic regurgitation was diagnosed correctly in 84 % of the cases—a high percentage because the previous post-mortem experience has taught them to disregard diastolic murmurs unless there are vascular phenomena to correspond.

Chronic myocarditis, on the other hand, was accurately "guessed" in only 22 % of cases, and Cabot thinks that the correct diagnosis is only a guess since there are no clinical symptoms and no physical signs constantly associated with this condition. Practically the same thing may be said of arteriosclerosis, in which, however, they were fortunate enough to estimate 60 %. One-half the thoracic aneurisms were missed, sometimes because too great reliance was placed upon the X-ray findings. Five-times there came the difficulty of deciding between aneurism and mediastinal tumor; in every case the autopsy showed aneurism.

In the respiratory system we find lobar pneumonia correctly diagnosed in 74 % of cases and broncho-pneumonia in only 33 %. It is always safe, when you have the signs of bronchitis, but the patient is too sick for simple bronchitis, to call it broncho-pneumonia.

Acute phthisis was correct in 59 % and miliary tuberculosis, in 52 % Cabot finds radiography of little use in early tuberculosis, agreeing in this respect with nearly all internists.

In the urinary system only 16 % of the acute nephritis cases were diagnosed. It was overlooked entirely in 62 %. But they were right in 74 % of cases of chronic glomerular nephritis and 50 % of chronic interstitial nephritis.

The other percentages of interest were: Cerebral hæmorrhage, 67 %; cerebral tumor, 72 %; septic meningitis, 64 %; tuberculous meningitis, 72 %; gastric cancer, 72 %; peptic ulcer (gastric or duodenal), 36 %, and cirrhosis 61 %.

He sums up his conclusions as follows:

"1. Never make a diagnosis of uræmia in a patient seen for the first time in an acute illness characterized by coma or convulsions. Such diagnoses rarely turn out right.

"2. Never make a diagnosis of ptomaine poisoning without definite chemical evidence. General peritonitis or a tabetic crisis is usually the correct diagnosis.

"3. Make no diagnosis of hysteria, neurasthenia or psychoneurosis in a patient whose symptoms begin after the forty-fifth year. The actual diagnosis is likely to be arterio-sclerosis, hyperthyroidism, dementia paralytica, or pernicious anæmia.

"4. Diagnoses of tertian malaria in patients whose symptoms resist quinine more than three days are almost invariably wrong.

"5. Bronchial asthma beginning after 40 usually spells heart or kidney disease.

"6. Epilepsy beginning after 40 usually means dementia paralytica or cerebral arterio-sclerosis.

"7. Typical migraine is often a symptom of unrecognized brain tumor or chronic nephritis.

"8. Most cases of 'bronchitis' mean tuberculosis, bronchopneumonia or multiple bronchiectasis cavities.

"9. Aside from the immediate results of acute infections (such as scarlet fever, diphtheria, tonsillitis and pneumonia) 'acute' nephritis usually turns out to be chronic.

"10. Acute gastritis and gastralgia usually mean appendicitis, gall-stones or peptic ulcer.

"11. Pus in or near the liver is often mistaken for serous or purulent pleurisy, for it produces identical signs in the right chest posteriorly.

"12. An X-ray of the shin-bones may give the first hint of an active syphilitic process in the joints or internal viscera"—*The Canadian Practitioner and Review*.

Luxuries as Remedies in Cardiac Diseases.

By MAX HERZ, M.D.

Of all so-called luxuries alcohol, above all, is indispensable at the bedside. Its use as an analeptic in cardiac cases has been unjustifiably neglected. There is no sense in giving a glass of heavy wine or the champagne that is so much prized, just as the strength is finally failing. In every case it must be determined whether the patient is one of the class that re-acts to very small quantities of alcohol, and especially with congestions and palpitation. Usually it will be proper to order a glass of light table wine to the patient confined to bed. In the case of young people, and especially females, a mild, sweet wine should be selected;

where repugnance to it has to be overcome, plenty of sugar should be added, and the drink diluted with some aerated water.

Alcohol shows itself to be not only a momentary stimulant, but, when the directions given are followed, it acts for a longer period as a tonic. In this form it is an excellent vehicle for easily-digested foods. Stokes' mixture is known everywhere.

Almost always in the case of patients suffering from cardiac disease and where feeding is difficult, a good sweetened warm wine and water are taken without difficulty and for long periods. In the case of patients who have been accustomed to alcohol and are disturbed in the night by tormenting dyspnoea from permanent arterio-sclerosis brandy is more of a corrective of taste, or a flavoring material when the attempt is made to unpoison the system by a pure milk diet. By the addition of a moderate quantity of brandy the milk that is so much detested is made to some extent palatable. Experience has taught us that in all forms of arterio-sclerosis, also in angina pectoris, or steno-cardiac troubles it may be given as a vascular remedy of great value, along with the bromine and the nitrites that quickly lose their effect.

Very frequently alcohol will perform extraordinarily good service in the treatment of mental disturbance. If the habits and inclinations of the patient are attended to it will not infrequently happen that by a slight concession the state of the mind of the patient is considerably improved, it may have been that he has got the impression that every enjoyment in life is denied to him, or it may be that the remedy acts directly by the dilation of the vessels of the central nervous system giving rise to a feeling of well-being.

As an hypnotic also in cardiac cases alcohol is to be preferred to many of the usual preparations. The form in which it is administered, however, is not a matter of indifference. Mostly beer and, especially, from old prejudice, the darker kind made from more high roasted malt, is preferred to wine. The like holds good in regard to rum as compared with brandy. It may be suitably given in a weak infusion of tea, or with milk, or diluted with lemonade.

Black coffee will find an exactly similar field of employment, tea less frequently. Like camphor, it is an excellent cardiac tonic and analeptic, and especially in combination with digitalis it forms a diuretic.

In cases of pronounced muscular insufficiency it causes a feeling of palpitation far less frequently than with healthy or nervous hearts. For this reason it appears to be contra-indicated in cardiac neuroses, also when the pulse is very small, as it frequently is in the exacerbations that

seem so threatening. The opposite of digitalis, which apparently slows the pulse through irritation of the vagus, coffee heightens the pulse rate. By preference it is used most in those cases of low cardiac activity in which the action of the heart is slow or normal; it is to be avoided, on the other hand, in the presence of marked tachycardia or tachyarrhythmia. If a quick reviving effect is desirable, however, the combination with alcohol is useful, especially cognac.

Coffee seems to have the same action as diuretin on the symptoms of sclerosis of the coronary arteries. But it has this evil in common with that, in that it favors the development of extra systole. As this leads to short interruptions of consciousness in cerebral arterio-sclerosis it cannot be made use of in such cases. Moreover, it should not be given in the evening hours, as it will increase the wakefulness already often present. Its action is only desirable in those forms of degeneration of the cardiac muscles where the patient is in almost a continual doze, only starting up at times in distress as the difficulty of breathing becomes greater.

There is opportunity of employing tobacco as a cardiac remedy only in very rare cases. The situation occurs when a patient who is a smoker has been deprived of his tobacco. The attitude of the individual patient varies in such cases. Whilst with one a greater desire for food is manifest, which leads to a wished for increase in flesh, others, on the other hand, complain of unpleasantnesses on the side of the stomach and bowels, especially constipation, which usually has a bad effect on any heart mischief that may be present. Under such conditions a moderate quantity of tobacco may be permitted, but without diminishing the pleasure by recommending the use of a milder kind instead of that the patient has been accustomed to. I have lately collected a good deal of information regarding the use of the so-called denicotinised tobaccos. A recently-invented process makes it possible to extract from 50 to 75 per cent. of the nicotine without any marked change of the flavor. This process may be carried out not only with raw tobacco but also in cigarettes and cigars already made. In this way a good deal of the poison may be removed from the tobacco consumed by patient suffering from a cardiac mischief, and to whom the "weed" is a great solace. So denicotinised, he may be allowed the enjoyment of this favorite brand. We need not enlarge on the importance of this as regards the spirits of the patient. Denicotinisation is of importance also on other grounds to abstinent smokers. It happens not infrequently that men who have been heavy smokers become singularly intolerant after a period of deprivation. Even the half of a cigarette may then cause palpitation, giddiness, or nausea,

which may be erroneously set down to unfavorable progress of the cardiac affection. It is, therefore, easily understood that under such circumstances one may wish to produce the desired effect by small quantities of the demicotinised tobacco, just as in the case of morphinists during periods of withdrawal, one may prevent the breakdown by minute doses of the poison to which they have become slaves. Luxuries may largely take on the part of curative agents. This is an advantage, especially in the case of cardiac diseases, when the latter can be replaced by the former. In this way the heaping up of medicines that is often so burdensome may be avoided, material is brought to the organism for which it has an instinctive inclination, the effects of which are better known than those of any medicine that can be continued for years without doing mischief and which are of inestimable value so much the more for the sick than for the healthy individual, inasmuch as by them a gleam of the sunshine of happiness, however pale it may be, is cast on to the sombre tints of everyday life.—*The Canadian Practitioner and Review.*

Hysteria in Childhood.

ROBERT HUTCHISON, M.D., F.R.C.P.

Hysteria is rare in childhood, and probably cannot be recognised with certainty below the age of 5. In certain points it differs from the disease in adults. It is as common in boys as in girls. The nearer to puberty the more the tenancy for the female sex to preponderate. In children hysteria tends to assume a simpler form than in adults. It is often "monosymptomatic," i.e., only one manifestation present. It thus obeys the rule that all disease processes in children tend to be simpler than in adults. Another characteristic is that many of the so-called stigmata, such as anæsthesia of the pharynx, contraction of the visual fields, and pressure points, are absent or exceptional.

There are two kinds of causes—(1) predisposing, (2) exciting. In many cases there is an inherited predisposition. This is aggravated by "spoiling" in the bringing up. Of exciting causes the commonest is trauma, physical or "psychical" (fright). In many cases no cause can be found.

Motor Manifestations.

Hysteria may assume various forms, the commonest, perhaps, being affections of the motor system—paralysis, fits, spasms, or tremors. Of paralysees, monoplegias and paraplegias are the commonest. Hemiplegias are less frequent. The paralysis is apt to be of sudden onset, and

it usually assumes the flaccid or limp type. Hence it is apt to be mistaken for infantile paralysis, as in the following case:

A boy, aged 12, was brought with a history of paralysis of the right arm, which had come on suddenly 5 months before. It had been regarded as due to poliomyelitis. There was complete flaccid paralysis of the right arm, but only moderate wasting. There was anæsthesia of "sleeve" distribution up to the shoulder. Otherwise he seemed normal. Under faradism accompanied by vigorous suggestion he immediately recovered the use of the limb.

The curious condition called hysterical astasia-abasia—inability to stand or walk—occurs sometimes in children. Usually it is the result of a condition which at the outset made standing or walking painful. After that has passed off, the astasia-abasia persists owing to the hysterical tendency. This seemed to happen in the following case:

A boy, aged 5, "went off his legs" at 18 months (result of scurvy), and had never walked since. He seemed quite healthy, there was no paralysis, and he kicked his legs about freely in bed. The knee-jerks were rather brisk and the plantars gave a flexor response. At first when one tried to make him stand he screamed and doubled up his legs, but after a few days of persuasion he stood up, and 4 days later was walking well. There was much anorexia, and it was difficult to induce him to take enough food.

Hysterical fits of the type seen in women are not common in children. Much more commonly an hysterical fit in early life closely simulates epilepsy, and sometimes the simulation has been so close that it requires great care to distinguish one condition from the other. The following is an example:—

A boy, aged 14, was seen. About 5 weeks before he fell down in the school playground in a "fit," from which he speedily recovered, but since that time he had been subject to rightsided convulsions, which were getting more frequent. For 2 days he had not spoken. He had rheumatic fever at 10, which left a mitral lesion, but otherwise he had enjoyed good health. His parents were said to be "nervous." There were four other healthy children.

He was a bright, healthy-looking boy, but exhibited complete "mutism." The fits recurred at intervals of a few minutes, and consisted in slight twitching of the right arm, leg and face. The attack began with a slight grunt and ended with a sigh. He was partially unconscious in the attack, but the conjunctival reflex was not entirely abolished. The eyes showed conjugate deviation in the attack, usually to the right, but

sometimes to the left. The pupils were equal. He never bit his tongue nor passed water in a fit. There was slight weakness of the right arm, leg, and face; and the knee-jerk on the right side was not so easily obtained as on the left. There was no anæsthesia, and the fundi were healthy. He readily obeyed commands, but wrote with great difficulty, and seemed to forget words and how to spell. He did not appear able to read print. Under isolation, faradism, suggestion, and cold shower baths, he quickly regained speech, and the fits stopped. In hysterical fits of this type mutism is a symptom of great diagnostic value.

Contractures of joints are rather common manifestations of hysteria in children. They often follow injury of the joint, which has caused pain and led to some degree of flexion, and that, owing to the hysterical basis, has become perpetuated and exaggerated so that there is extreme spasm. The following is an example:

A girl, aged 11, was admitted to hospital for spasm of the hands of 2 to 3 days' duration. She had several similar attacks during the preceding year and the feet also had been "doubled up," but the attacks had always passed off quickly in hospital. The patient said that the spasm began with a feeling of "giddiness"; then the thumbs bent in and the hands closed so that she could not open them. There was nothing noteworthy in the family history, and up till a year ago she had enjoyed good health.

She was well developed, with a rather sullen expression. The fists were tightly closed, with the thumbs bent in and the arms bent across the chest. By gradual pressure the fingers could be unbent and straightened out, and then she could move them freely. The knee-jerks were exaggerated, but there was no ankle clonus. Sensation was normal. The spasm quickly disappeared in hospital, but she had a typical attack of "globus."

In hysterical contracture there may be a real organic basis. A child may have commencing tuberculosis, or some other disease of a joint, but instead of the ordinary stiffness and slight flexion there is this exaggerated response. Beware of attributing the whole condition to hysteria.

Of hysterical tremor there are various forms. There may be a true intention tremor, which comes on only on attempts to use the affected part. Thus a boy, aged 10, had tremor of the hand as soon as he tried to write, although he used it for other purposes well. Sometimes the tremor consists of a series of repeated clonic spasms confined to one group of muscles. The condition called paramyoclonus in children seems to be

hysterical. It is characteristic of such hysterical spasms that they tend to stop during sleep.

Sensory Manifestations.

These are less common in children than the motor. There may be hemi-anæsthesia, or there may be anæsthesia of one limb of the sleeve type, as in the first case. But in a considerable number of cases the hysteria is mono-symptomatic, and there is paralysis of sensation without paralysis of motion.

Respiratory Manifestations.

Mutism and aphonia are, in a sense, affections of the respiratory system, and both are common signs of hysteria in childhood. Mutism illustrates the tendency of hysterical manifestations to assume an exaggerated form. Instead of a mere difficulty in speaking, as in aphasia, there is complete dumbness. Another characteristic feature of hysterical mutism and aphonia is that the child can cough, although he cannot talk. In true paralysis of the vocal cords that would be impossible.

One sometimes meets with a *hysterical cough*. A boy, aged 15, was brought for a cough, which went on incessantly, wearing out the nerves of all the people in the house. He had had a similar attack 3 years previously, which passed off in about a month. A year later he had another, lasting 3 weeks. He was hit on the head by a cricket ball, and a week afterwards complained of pain behind the right ear. Nothing was found, but he kept holding a handkerchief to it all the time till the pain passed off, in about 4 weeks. Next year he got a worse attack of cough than ever, accompanied by great tachypnœa (120 per minute). The cough was attended by frothy expectoration, but there were no signs in the chest or throat. It is noteworthy that the cough ceased when he was asleep. This attack passed off, and he returned to school and remained well till the beginning of the present year.

He was a pale, rather poorly-nourished boy, with a constant noisy cough, repeated every few seconds. The lungs were perfectly healthy. The throat showed the remains of embedded tonsils, and the vocal cords were somewhat reddened. Examination with a probe showed some tender spots on the pharynx, which seemed to be the starting-points of the cough. The tonsils were nucleated, and the day after he did not cough at all. The following day he coughed as before, but next day he was much better. He subsequently made a good recovery.

Sometimes there is a *hysterical cry* or repeated utterance.

A girl, aged 7, was brought with the complaint that "she had made curious noise" for the last 5 months, but it was getting more frequent, and occurred nearly every day, lasting from one to 4 hours at a time. The attacks were accompanied by pain in the throat and "round the heart."

She was the only child of a very emotional mother, precocious and rather spoilt, but well developed and healthy looking. She had never had fits, but had sometimes had "inability to walk," and had fallen down on several occasions in the week before she came under observation. During examination the cry came on; it took the form of a curious indrawing sort of crow, difficult to describe, and was frequently repeated. Physical examination was negative. She was admitted to hospital, but during her stay in the ward was perfectly normal.

Another interesting respiratory manifestation is *hysterical dyspnoea*, or tachypnoea—rapid and laboured breathing without apparent cause.

A boy, aged 8, was sent with a history of laboured breathing for 8 weeks, following a series of "fits," which had been preceded by obstinate constipation. In the fits he was said to be unconscious and threw his arms about, but did not pass water. He had always been delicate and constipated, and had a poor appetite, living chiefly on biscuits.

On examination he showed continuous panting respiration (36), the inspirations being forced, but without involvement of the accessory muscles, nor over-activity of the diaphragm. His breathing became worse when he was looked at. There were no signs of disease in the lungs nor elsewhere, but he exhibited some twitching of the nose and mouth. The knee-jerks were brisk and the fundi healthy, but there seemed to be some contraction of the visual fields. Under faradism to the spine he much improved.

Ocular Manifestations.

Blepharospasm is sometimes hysterical. It usually begins with a slight conjunctivitis or ulceration of the cornea, which causes ordinary blepharospasm, and then the condition becomes exaggerated and perpetuated. A little girl, aged 7, exhibited this symptom in an extreme degree, one eye being screwed up as tightly as possible. She has had a good deal of conjunctivitis for some time previously, but it had now subsided. On telling her she could open her eye and encouraging her to do so, she opened it, and the spasm did not return.

Diagnosis.

Mistakes are apt to be made from overlooking some underlying organic condition. An interesting case is recorded by Dr. CHAFFEY of a boy, who was believed to have hysterical anorexia from emotional disturbance on the death of a favourite sister, but who proved to have a cerebral tumour. Symptoms and signs which cannot be voluntarily produced or simulated are probably not hysterical. Most hysterical manifestations can be simulated or produced by an effort of the will. Anybody can be mute if he wants to, whereas changes in the optic discs, abolition of the deep reflexes or true clonus, cannot be simulated or voluntarily produced. Such signs are never hysterical. There is often something exaggerated or bizarre in hysterical manifestations. A hysterical pain, for instance, is always an extreme pain, hysterical paralysis is always absolute paralysis, an affection of speech amounts to complete mutism, hysterical anæsthesia is profound anæsthesia, and so on. An effect out of proportion to the cause is suggestive of hysteria, as when a child gets a slight injury to a joint and develops a violent contracture. Inconsistency of the symptoms with themselves is suspicious of hysteria. In the case of *astasia-abasia*, for instance, the child can kick its legs about in bed freely, although it cannot stand. It may be able to cough, but not to speak. Or the signs and symptoms may be inconsistent with anatomical facts. A paralysis for example, has not an ordinary nerve or centre distribution, or an anæsthesia may not correspond to any distribution of peripheral nerves, or to central nerve areas, as, for example, in the sleeve type of anæsthesia. This is absolutely conclusive of hysteria. Sudden onset or disappearance of the symptoms or causeless variations in their intensity is suggestive of hysteria. Finally, the maintenance of a good state of the general health, notwithstanding severe local symptoms, is suggestive.

Prognosis.

The prognosis is good as regards immediate cure, is better than in the adult, but the difficulty is to prevent relapses, because of the patient's constitution and often because of his environment.

Treatment.

The most important point is isolation. Get the patient into a home, or hospital. Next, ignore, as far as you can, the condition of the child. Repeated examinations, demonstrations to students, and so forth, are bad for the patient. The doctor and nurse should not be over-sympathetic. In dealing with specific symptoms, the "method of surprise" is

good. In astasia-abasia, for instance, put the child suddenly on its feet and tell it to walk. Sometimes he is taken aback and does walk. But the objection to this method is the risk that if it is not successful you have not only failed to effect an immediate cure, but you have done something to perpetuate that symptom. "Suggestion" is of great help, saying, for instance, that the child can move the limb, or that the pain has gone away, or that he can straighten out an affected joint, etc. Cold shower baths are useful. Drugs, such as valerian, are perhaps helpful, and in some cases tonics (iron, arsenic, and strychnine) may be necessary.—*The Medical Review.*

SURGERY.

A Short Note on the Treatment of Vomiting following Chloroform Anæsthesia, Including the use of Adrenalin.

BY

J. W. KRAY M.D., F.R.C.P., D.P.H.

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After chloroform anæsthesia one expects a certain amount of vomiting. This after-effect, as a rule, results more in discomfort to the patient than in any actual danger. Occasionally, however, by its persistence, the patient's condition is rendered grave, and effectual means of combating the complication are earnestly sought for. The causative factor is still a subject of debate. Some authorities hold that it is of central nervous origin, while others consider a local condition of the stomach to be the cause. To my mind the cause varies with almost every case, and generally both the central nervous system and the stomach are at fault. The derangement may be chiefly central or chiefly local, but there is always some combination of the two. In very severe cases interference with the functions of the liver and general metabolism may be the cause.

Let us consider the more simple cases. A nervous patient has had a minor operation with a short anæsthesia. She feels violently sick, and her strenuous efforts to get something up can be distinctly heard through a closed door. A little mucus is the result. Give her an enema of bromide and chloral and the violent retching ceases as the feeling of nausea disappears. If the patient has not been properly prepared for the anæsthetic by low diet and tonic treatment, sickness comes on early, usually during the administration of the chloroform, and ceases, or is lessened in severity, when the stomach is emptied. This proves to us that with chloroform anæsthesia the stomach is made irritable and wants rest,

The rational treatment, therefore, for ordinary sickness is:—Give nothing by the mouth for 24 hours till Nature has reasserted herself. Any food-stuff, however readily digested, if introduced into the stomach will further irritate that organ. Thirst, which may be complained of, can be assuaged by saline enemata. When the tongue and mouth feel dry, rinsing out the mouth with aerated soda-water or lemon-water either hot or cold, will relieve the condition.

The sickness tends to be more severe when the anæsthesia has been prolonged. Chloroform acts as a depressant, but it also excites the secretion of glands, chiefly the salivary glands. At the beginning of an administration of the drug, especially when the chloroform is being pushed to get the patient under, saliva is being swallowed in large quantities. That saliva is saturated with chloroform. Mucus is secreted copiously. The gastric glands are pouring out a strongly acid secretion. We have, therefore, a powerful irritant collecting in a comparatively empty stomach. A gastritis is set up. When the effect of the general anæsthetic is passing off the lowest functions, such as muscular tone, are the first to reappear. The irritated stomach tries to get rid of its tormentor and vomiting begins. The mucus is tenacious and vomiting is prolonged. The gastritis adds to the severity and painful character of the retching. The stomach contents are often so acid that the patient's lips and cheeks are excoriated by the vomit.

The treatment for such cases is large draughts of strongly alkaline solutions aided by counter-irritation over the epigastrium. Bicarbonate of soda dissolved in hot water is given by the tumblerful. This neutralises the acid, dissolves or loosens the tenacious mucus from the stomach walls, and dilutes the irritant in the stomach. The stomach is emptied by the vomiting which follows, or the fluid passes on into the duodenum. This second process is aided by keeping the patient on her right side, supported by a hard pillow at her back, or by having her raised to a semi-sitting position, with a firm pillow under her knees.

Hot fomentations, poultices with or without mustard, blisters, or an ice-bag are all efficient counter-irritants for the epigastrium. Of these, hot fomentations or a light poultice are the best. It is often necessary to use some medicinal means to cure the gastritis. I have found that a mixture of dilute hydrocyanic acid, bismuth and soda acts very well, and in some cases with a foul tongue powders of rhubarb, bismuth and soda are useful. Such treatment relieves the patient of the distressing heartburn which generally follows severe sickness. Hot coffee and champagne are useless in severe vomiting. Oxalate of cerium

is sometimes of use. Sucking ice increases the thirst, an ice-bag on the stomach is better. Inhalations of vinegar and cold cloths round the neck keep the patient occupied till the sickness stops. Morphia increases the sickness, possibly by causing flatulent distension, but is sometimes of use in giving the patient a short rest when she is suffering severe pain, or is worn out with the constant retching. A combination of scopolamine and morphine, when given as an aid to general anæsthesia, is better. The patient rests well with little sickness the first night after the operation, and there is less trouble with gas distension than with morphia alone. Chloretone in doses of 10-20 grains gives varying results. It is sometimes beneficial when there is constant retching and little vomited matter. Cocaine, which is highly spoken of by some authorities, I have tried in doses of $\frac{1}{2}$ — $\frac{1}{4}$ grain without benefit.

Let us now consider the more serious cases of persistent vomiting, in which there is an element of danger from the first.

In all major gynæcological operations attended with some degree of shock, whether due to excessive exposure of abdominal contents, to great loss of blood, or to sepsis, the complicating effects of the anæsthetic are more pronounced. The disturbing condition of gas distension is present. This may be associated with intestinal paresis or reversed peristalsis. The distended intestines press on the irritable stomach and constant vomiting is the result, or the patient complains of a distressing feeling of sickness without being actually sick. If reversed peristalsis is present there will be a continuous regurgitation of bile into the stomach with persistent vomiting. In most of these cases the vomit is not only dark from bile-staining, but is a coffee-ground vomit from the presence of blood. Sometimes the vomiting in these cases does not begin till from 12 to 24 hours after the operation. During that first day the patient appears to be very well. The pulse is not very rapid and the temperature about the normal. They have no pain. I consider that a danger signal. After the first day the pulse gets rapid and the temperature is sub-normal or high. The vomiting begins and is violent and persistent. The patient becomes restless or is exhausted, and if not carefully treated the sickness ends fatally in three or four days. Death in these cases has been attributed to an acute acetonæmia, caused by the inhalation of chloroform and failure of the kidneys to excrete the acetone with sufficient rapidity to prevent coma, by Guthrie, Beesley and others. The fatty antecedents of acetone rather than acetone itself is held by some to be the cause. Post-mortem fatty changes are found in the liver, heart and kidneys. Rather

and Saison, examining the liver after the inhalation, subcutaneous injection and intravenous injection of chloroform, found almost constant degenerative changes in the liver cells. These changes although slight could be detected after a 10-minute inhalation administration. The lesions were more marked if inhalation was prolonged or if the liver was examined some time after the giving of the anæsthetic. Does this explain delayed death following chloroform anæsthesia? Aubertin has succeeded in producing in healthy animals delayed death after a single chloroform anæsthesia, and has found two varieties of lesions; visceral changes affecting chiefly the liver, and general congestive and hæmorrhagic phenomena. Jaundice is not a symptom in chloroform poisoning, nor does it accompany these necrotic changes in the liver produced experimentally.

After most abdominal operations flatulence is relieved by giving salines per rectum—1 pint to 1 quart every four hours—leaving in a rectal tube for an hour or so between times. Rubbing the abdomen adds to the comfort of the patient; more vigorous treatment may be required, such as turpentine enemata. If the violent sickness still persists on the second day, castor oil or magnesium sulphate should be given by the mouth. Although these drugs are most often rejected a certain quantity stays down and will do good. If the bowels do not act in six hours an enema of soap and water will prove effectual. Peristalsis returns and gas does not accumulate. The patient's strength, which is failing under the stress of the constant sickness, can be sustained by rectal enemata of brandy and water and sips of brandy by the mouth.

When the vomit is hæmorrhagic and resembles beef-tea dregs or coffee grounds, I carry out the above treatment for flatulence, stimulate the patient, give copious draughts of hot soda solution, and in addition administer by the mouth a solution of adrenalin chloride *mv.* to *mx.* in a teaspoonful of water. Why use adrenalin? Two years ago, after having witnessed a fatal result in a case of persistent hæmorrhagic vomiting in which washing out the stomach, intravenous saline infusions, stimulants, etc., had proved unavailing, I wondered at the quantity of coal-black material which was washed out of the stomach. Where did the blood come from? Most, if not all, of those cases have been suspended by the legs in the Trendelenburg position for an hour or more. In this position the blood gravitates from the large blood-vessels in the abdomen and engorges those of the head, neck, and thorax. Are the vessels of the stomach also engorged? Do they remain engorged after the patient is put back to bed and rupture under the

stress of retching? Under these circumstances the vomit would be clear or bile-stained at first, subsequently becoming hæmorrhagic. In some cases this does occur. In the cases in which vomiting is delayed for twenty-four hours the vomit is black right away. The stress of retching cannot have caused rupture of dilated vessels, for there has been no retching. Has the stomach been made anæmic by the Trendelenburg position, and have small ulcers been eaten out of the mucous membrane by the excessively acid stomach contents, as in the gastric ulcers occurring in chlorosis, secondary anæmia, etc.? Are the hæmorrhages due to hepatic insufficiency? From whatever cause, there is a leak of blood into the stomach. Blood when swallowed causes vomiting. This blood, collecting in the stomach, must also tend to increase the sickness already present. By washing out the stomach with a rubber tube and funnel we get rid of that blood which has already collected, but it goes on collecting. If large quantities of strong soda solution are given by the mouth the stomach is washed out, and the tenacious mucus is separated from the stomach walls. Follow this with the administration of adrenalin. The vomit will no longer be hæmorrhagic, and the sickness soon disappears. This mode of treatment has been carried out in a number of cases with surprising results. The following are a few selected cases:—

1. Mrs. B., æt. 46, after removal of a large ovarian cyst had persistent brown vomit. She had three doses of *miii.* of adrenalin chloride solution, strength 1 in 1,000, during the afternoon and evening of the second day. On the third day the sickness was less severe, the vomit being stained with green bile, and on the fourth day vomiting had ceased.

2. Mrs. F., æt. 36, who also had an ovarian cyst removed, had black vomit the second day. She had *mv.* of adrenalin twice. The vomit, which was strongly acid, burning the corner of her mouth, was first brownish-yellow and then colourless after the adrenalin. Vomiting ceased on the third day.

3. Mrs. P., æt. 50, had a large fibroid uterus removed by supra-vaginal hysterectomy. Violent persistent vomiting continued for three days, the vomit being black in colour. She was becoming exhausted. Two doses of *mx.* adrenalin were given on the third day. She had been constantly sipping strong hot soda solution, and had had counter-irritants over the epigastrium, saline enemata, etc., as all these cases had. The vomiting ceased almost immediately after the administration of the adrenalin. The sister in charge graphically described the result by remarking: "It acted like magic."

4. Mrs. J., æt. 25, who had a ruptured ectopic pregnancy removed, suffered from persistent and copious brown vomit. One dose of *mv.* adrenalin brought about a cessation of the vomiting.

5. Mrs. S., æt. 38, after removal of hæmato-salpinx, had copious bile-stained vomit. Adrenalin was also tried in her case. She had three doses of *mv.* at two-hourly intervals. A feeling of nausea, accompanied by the spitting up of a little white mucus, continued for a few hours and then ceased.

Suprarenal extract has as yet only been used in therapeutics to a limited extent. Its ischæmic effect is well known. When injected hypodermically it stimulates unstriated muscles, setting up powerful contractions. It is a heart stimulant, acting like digitalis. It has been said that it can be given in doses of *mv.* to *mxix.*, but that it is probably so diluted by the stomach contents that it has no action when given by the mouth. I beg to disagree with that. It has been given in hæmatemesis. It has been used with success as a stimulant in cases of sudden heart failure during the administration of chloroform. Gottlieb has shown that in animals poisoned with chloral or chloroform until the pulse has almost ceased, the circulation may be restored immediately by this treatment.

I can only explain its action in persistent vomiting by supposing that it stimulates the muscles of the stomach walls, blanches the dilated capillaries, and sets up regular rhythmical contractions of the stomach, which cause its contents to follow their natural course and to flow on into the duodenum.

For the collapse accompanied by an exceedingly rapid pulse which sometimes ensues in cases of protracted and exhausting vomiting salines and general stimulants are much more effectual than cardiac stimulants even in very large doses. As in the treatment of pneumonia, better results are got by toning up the heart before the crisis, so with gynecological section cases, digitalis, strychnine, and light diet prior to the operation will do more for the patient than $\frac{1}{100}$ th digitalin and $\frac{1}{80}$ th strychnine given every two hours or oftener when the pulse becomes rapid. Personally, I am of opinion that hypodermic medication carried out during chloroform sickness will increase the sickness. Hypodermics of strychnine and morphia are especially liable to cause sickness. Not one but several patients have assured me that these drugs so administered made them sick, and from observations I have since made I think it highly probable.

We have nothing which is certain in its result as a prophylactic in this often serious condition of post-anæsthetic vomiting. In a few cases

when the operation was of long duration and anæsthesia prolonged, and in others where there had been excessive loss of blood, I have practised intravenous infusion of normal saline solution during the operation. None of these patients suffered from intractable sickness. Much depends on the manner of administration. The after-complications of chloroform anæsthesia are of a nature so grave in many cases that none but an expert ought to be permitted to administer the drug in major operations.—*The Practitioner*.

Treatment of Vomiting After Chloroform Anæsthesia.

In Keay's opinion (*Practitioner*) the cause of this vomiting varies in almost every case, and generally both the central nervous system and the stomach are at fault. The derangement may be chiefly central or chiefly local, but there is always some combination of the two. In very severe cases interference with the functions of the liver and general metabolism may be the cause. A nervous patient who has had a minor operation with short anæsthesia, feels violently sick, and the strenuous efforts to vomit can be distinctly heard through a closed door. A little mucus is the result. If an enema of bromide and chloral be given the violent retching ceases as the feeling of nausea disappears. If the patient has not been properly prepared for the anæsthetic by low diet and tonic treatment, nausea and vomiting come on early, usually during the administering of the chloroform, and ceases, or are lessened in severity when the stomach is emptied. This proves that with chloroform anæsthesia the stomach is made irritable and wants rest. The rational treatment, therefore, for ordinary cases is: give nothing by the mouth for twenty-four hours till Nature has reasserted herself. Any foodstuff, however readily digested, if introduced into the stomach, will further irritate that organ. Thirst, which may be complained of, can be assuaged by saline enemata. When the tongue and mouth feel dry, rinsing out the mouth with aerated soda-water or lemon-water, either hot or cold, will relieve the condition.

The vomiting tends to be more severe when the anæsthesia has been prolonged. The treatment for such cases is long draughts of strongly alkaline solutions, aided by counter-irritation over the epigastrium. Bicarbonate of soda dissolved in hot water may be given by the tumblerful. Hot fomentations, poultices with or without mustard, blisters, or an ice-bag, are all efficient counter-irritants for the epigastrium. Of these, hot fomentations or a light poultice are the best. It

is often found necessary to use some medicinal means to cure the gastritis. Keay has found that a mixture of dilute hydrocyanic acid, bismuth and soda acts very well, and in some patients with a foul tongue, powders of rhubarb, bismuth and soda are useful. In all major gynecologic operations, attended with some degree of shock, whether due to excessive exposure of the abdominal contents, to great loss of blood, or to sepsis, the complicating effects of the anæsthetic are more pronounced. After most abdominal operations flatulence is relieved by giving salines by rectum, from one pint to one quart every four hours, a rectal tube being left *in situ* for an hour or so between times. Rubbing the abdomen adds to the comfort of the patient; more vigorous treatment may be required, such as turpentine enemata. If the violent sickness still persists on the second day, castor oil or magnesium sulphate should be given by the mouth. Although these drugs are most often rejected, a certain quantity stays down, and will do good. If the bowels do not act in six hours an enema of soap and water will prove effectual. Peristalsis, which is failing under the stress of the constant sickness, can be sustained by rectal enemata of brandy and water and sips of brandy by the mouth.

When the vomited matter is hæmorrhagic, and resembles beef-tea dregs or coffee grounds, the patient should be stimulated by copious draughts of hot soda solution, and in addition a solution of adrenalin chloride, *mv* to *mx*, in a teaspoonful of water, should be given by mouth. It stimulates the muscles of the stomach walls, blanches the dilated capillaries, and sets up regular rhythmical contractions of the stomach, which causes its contents to follow their natural course and to flow on into the duodenum. For the collapse accompanied by an exceedingly rapid pulse, which sometimes ensues in cases of protracted and exhausting vomiting, salines and general stimulants are much more effectual than cardiac stimulants even in very large doses.—*The Canadian Practitioner & Review*.

Importance of Recognition and Treatment of Adenoids.*

BY A. H. PAINE, M.D.,
CALEDONIA, N. Y.

In preparing this paper I have had no idea of telling the profession anything new in regard to adenoids, but to bring before you the importance of recognizing and treating the condition.

* Read at the annual meeting of the Seventh District Branch, at Geneva, N. Y., September 15, 1910.

In my experience I have found the laity totally ignorant of the existence of adenoid growths in the nasopharynx, and to my great surprise a very large percentage of the professional in the out of the way country districts, have exhibited either a total ignorance, a contemptuous disregard or a tolerant recognition of the condition; the latter contenting themselves that nature would remove the offenders at or shortly after puberty. It is literally appalling to see cases of almost total occlusion of the posterior nares with the concomitant profuse catarrhal discharge setting up a chronic laryngitis and bronchitis, treated with various cough remedies; chronic middle ear catarrh and suppuration, more or less impairment of hearing go on and on for months and years with no attention to an obvious eustachian obstruction by adenoids or tonsils. The ravages of the pharyngeal adenoids do not always stop at secondary effects. They sometimes are the actual cause of death, as in a comparatively mild scarlatinal infection seen by me on consultation last winter. The patient, a child of five years, had total occlusion of the nares together with a pair of tonsils that filled the throat to the extent of a lumen that would just admit a swab the size of a lead pencil. In my opinion nothing but the condition of the child's throat caused the fatal termination of the case.

The frequency of occurrence of the condition is hard to estimate as different reports give estimates as low as 2 per cent., but if we may draw an inference from the investigation of Dr. G. A. Leland in 127 cases of scarlet fever, finding adenoids present in eighty four cases, and absent in forty-three, we might estimate that least 50 per cent. of all children have more or less hypertrophy of the pharyngeal lymphoid tissue. These figures seem large and it is not to be inferred that every case of minor degree requires radical treatment; it merely goes to show that the condition is extremely common.

By the term adenoids we designate a pathological condition of the nasopharynx comprising an hyperplasia and infection of the normally situated lymphoid tissue a part of the lymphoid ring surrounding the original embryonic orifice, the remainder of which is seen in the faucial and lingual tonsils.

Histologically we find the adenoid composed of loose succulent connective tissue, holding in its meshes glandular elements and a rich vascular net-work, mostly veins. Such a structure is naturally susceptible to the slightest irritation and readily infected, its location being favourable for both accidents to occur frequently. Mayo and others report that the examination of the removed tonsils and adenoids discloses

tuberculous foci in 8 per cent. of the former and 16 per cent. of the latter. The growth is always covered with a sticky mucous secretion which favors the adherence of all manner of respired micro-organisms. This germ laden secretion in time being dropped into the throat, finds its way to the larynx and bronchi or to the stomach, giving opportunity for infection of the lower respiratory tract or gastro-intestinal tract. Beside this direct mode of infection we have a well beaten path to various important organs by way of the lymphatic system. The experiments of Grober have proven conclusively that by way of the lymphatic vessels a direct communication exists between the glandular organs of the pharynx and the bronchial and mediastinal glands and apices of the lungs, whence may come an almost direct tubercular infection of these latter structures. Tuberculous glands of the neck almost certainly have their origin in the tonsil and adenoid, and it is highly probable that many cases of tubercular meningitis arise from a tuberculous adenoid. The tonsil has long been known as the "portal of entry" for a number of acute infectious diseases, among which stand pre-eminently acute rheumatic fever and scarlatina, and what may be said of the tonsil in this respect is in a large measure true of the adenoid.

The most conspicuous consequence of adenoids is obstruction to nasal respiration. This may be constant or intermittent, complete or partial, according to the size and location of the growth and the amount of irritation present. During an acute coryza a growth of moderate size may cause complete occlusion. As a result of this obstruction we have an impairment of ventilation to the nasal chambers, and a disuse of the nasal functions, with a production of various grades of catarrhal changes in the mucous membranes. It is reasonable to presume that a chronic catarrhal process, occurring at a period of life when the bony and cartilaginous framework of the nose is soft and impressionable, might be responsible for many abnormalities of the septum and turbinates found so commonly in later life. The disuse of the nares soon produces a narrowing of the nostril, a broadening and flattening of the nose in the region of the bridge and a change in the facial bones, amounting in severe cases, to little short of deformity. The compensatory result of occluded nares is mouth breathing with the disadvantages of not filtering the respired air nor regulating the amount of heat and moisture to be carried to the lungs. The chronic swelling of the upper turbinates interferes with the sense of smell and causes more or less headache. The closure of the nose and accessory sinuses, a variable amount of deformity of the hard palate and dental arch often accompanied by enlarged

tonsils produce a distinct alteration in the voice, there being a lack of resonance and thickness of speech. Many cases of deafness, chronic catarrhal and suppurative otitis media have their origin in adenoids. Pressure exerted by a large central adenoid or by small ones in the fossa of Rosenmuller, may occlude the eustachian orifice and interfere with the ventilation and drainage of the middle ear, or infection travel up the tube from them.

Chronic coughs of the most intractable character often disappear magically after the removal of adenoids. These coughs may be reflex or due to an extension to the larynx of the catarrhal condition above. An examination of the nasopharynx of children suffering from repeated attacks of spasmodic croup and bronchial asthma, will nearly always disclose adenoids, the removal of which will greatly lessen if not stop the attacks. The restricted supply of air decreases lung expansion and flat hollow chests or in rachitic subjects the pigeon breast results. The general health of a child with adenoids is usually below par. Insufficient oxygenation results in anæmia, asthenia and under development, both physically and mentally. This lowered condition renders them especially susceptible to infectious diseases and less able to combat them. A number of remote reflex symptoms are attributed to adenoids, such as stammering, chorea and enuresis, and while this seems far-fetched, in obstinate cases of these conditions an investigation of the nasopharynx may disclose a condition which, if properly treated, would aid their cure.

The chronic nasal or pharyngeal discharge, cough and impaired hearing, with the typical mouth breathing, broad nose with small nostrils, general appearance of dullness and apathy make the diagnosis so easily in marked cases, and the simple introduction of the finger up behind the soft palate so easily confirms the diagnosis that it does not seem that any one should let a case with which he comes in contact go without proper treatment.

Just a word in regard to treatment. While systematic treatment and properly directed treatment of the nasopharynx, continued over a considerable period, will cause a subsidence of the catarrhal symptoms, recurrence is inevitable and the best policy is complete extirpation of the growth by curette as early as possible.—*The New York State Journal of Medicine.*

The New Treatment of Syphilis. (Ehrlich-Hata.)

OBSERVATIONS AND RESULTS.

Henry L. Elsner who has visited Ehrlich at his laboratory and has seen Wechselmann and Citron use the Ehrlich-Hata treatment for syphilis in Berlin, has used this treatment in his private and hospital practice since his return. From his experience he believes the following conclusions are justified:

1. The treponema, otherwise known as the *spirochæte pallida*, is positively destroyed and the living contagion of syphilis is promptly removed by the Ehrlich-Hata remedy.
2. The preparation "606" promptly and favourably affects visible and palpable syphilitic lesions. It also removes deep-seated gummata.
3. The remedy stays the destructive and onward march of syphilitic ulcerations and causes their healing in a surprisingly short time.
4. It is more rapid in its effect on specific disease than any other known remedy.
5. It is likely to prove more valuable than any other remedy in the treatment of the specific diseases of most internal organs.
6. It cannot replace cicatricial tissue, the result of Nature's reparative processes; neither does it affect favourably chronic degenerative diseases of the nervous system, such as paresis, system-diseases of the cord, in which there is a break in the continuity of nerve structure, though in some cases it seems to influence favourably the continuous crises of locomotor ataxia.
7. In all cases it causes a leukocytosis and the formation of antibodies.
8. It materially modifies, and in most cases ultimately negatives, the Wassermann reaction.
9. It unquestionably floods the circulation with endotoxins resulting from the death of millions of spirochætes, and in all probability an antitoxin is developed in the blood-serum. These facts must be thoroughly considered in connection with the treatment.
10. In acute and threatening deposits in vital organs the effect of "606" will often prove life-saving because of its prompt action, and for that reason it is preferable to the iodids or mercury.
11. It ought not to be given to ambulatory patients; neither is it safe in the hands of the careless or those who have not seen it used and learned the difficult method of its preparation for injection.

12. The hospital, where all things required in the preparation of the mixture of "606" can be sterilized, and where the centrifuge can be used, is preferable to any other place for its injection.

13. Patients injected should be kept quiet and in bed during seven days under close observation, and for a longer period if indications demand.

14. Second injections, if indicated, should not be given in less than eight weeks after the first.

15. Contra-indications should be carefully considered before using the remedy. Patients with any other infection than that of syphilis should not be injected, however mild the former may be, until a safe period has lapsed after their recovery; neither should the feeble or old or those with other than syphilitic organic disease be injected.

16. Congenital syphilis demands the treatment, either directly or indirectly, as suggested in the paper.

17. The living contagion is destroyed by "606"; hence its early use can prevent the spread of syphilis. This subject demands the immediate attention of sanitarians and those directly interested in public health.

18. In occasional well-selected cases the use of the iodids after the method of Wechselsmann will increase the efficacy of "606" when second injections are necessary. From two to three weeks should lapse after thorough mercurial treatment, when this has been used, before the injection of arseno-benzol.

19. In spite of the fact that nearly all agree that the effect of arseno-benzol is magical, sufficient time has not lapsed to justify the conclusion that a single injection of "606" will prevent what we now recognize as the secondary and tertiary stages of syphilis. Only after long years of careful observation shall we be able to reach a positive conclusion. It will be necessary therefore to keep injected patients under close observation.—*The American Journal of Ophthalmology*.

OPHTHALMOLOGY.

The Treatment of Corneal Ulcers.

A large proportion (10 per cent.) of eye inpatients are admitted for corneal ulceration. The majority of these are traumatic in origin and are produced in miners and stoneworkers by sharp particles of coal or stone striking the cornea or getting into the conjunctival sac. This type of

ulcer is fairly deep, quickly growing, situated in the lower two-thirds of the cornea; it presents a well-defined, opaque, crescentic border, the hollow of the crescent looking towards the middle line of the cornea. The advancing border is densely infiltrated with leucocytes, and the entire ulcerated area is less transparent than the normal cornea.

THE CAUSE OF CORNEAL ULCERS.

Almost 50 per cent. of these cases suffer from chronic conjunctivitis and regurgitation of mucopus from their lachrymal sacs as bacteriological examination of similar particles of stone and coal is negative it is more than probable that the offending organisms exist in the conjunctival sac before the accident, which removes the protective epithelium.

The associated iritis, as well as the exudate into the anterior chamber, are directly proportionate to the severity of the ulceration and the virulence of the infection. Corneal abscesses, collections of pus cells in layers of the cornea, are serious complications.

TREATMENT IN SIMPLE CASES.

If seen early enough when the ulcer is just below Bowman's membrane and before the crescentic border has appeared, it is sufficient to douche the conjunctival sac with warm saline or boracic lotion, and to touch the ulcer with pure carbolic acid. This is best applied with the end of a fine probe, round which a small piece of wool has been firmly twisted. When the sharpened end of a wooden match is used the acid is apt to run over the cornea, and it is not uncommon to find on the following day fresh points of infection due to abrasions of the epithelium. The acid on the wool-covered probe, even if it be saturated, is limited to the spot touched, and there is no possibility of damage to the epithelium.

ADVANCED CASES.

When the advancing edge has appeared, touching with carbolic acid is too uncertain; best results are obtained by staining the ulcer with 2 per cent. fluorescine, after anaesthetising the conjunctival sac with 5 per cent. cocaine and then by applying the galvano-cautery. If there is much congestion a drop of adrenalin chloride (1 in 1,000) increases the action of the cocaine. The cautery at a dull red heat is applied to the whole of the stained area, and just beyond it in the region of the crescentic border. Atropine sulphate drops (1 per cent.) are instilled three or four times daily, and hot fomentations applied two-hourly during the day and less often at night. The patient should be kept in bed.

the room. The Government Analyst found zinc and tracts of manganese in the organs, and zinc in the syringe.

A similar case in which the drug used was permanganate of potash has been recorded—*The Medical Review*.

Gangrene of the Arm after Ergot Poisoning.

At a recent meeting of the *Societe Medicale des Hopitaux*, Drs. Dufour and Huber showed a patient who had been admitted to the Maternity Hospital in a state of coma. The existence of a five months' pregnancy gave rise to the idea that the patient was eclamptic, but bleeding gave no relief to the agitation which followed coma, and was accompanied by hyperthermia. It was then noticed that the right arm was paralysed and cold. The general condition improved after a time, but the limb remained cold, black phlyctenules appeared, and the axillary pulse could no longer be felt. In the presence of these signs of gangrene by arteritis it was found necessary to amputate the arm, upon which the existence of a clot extending to the axillary artery was noticed. The bloodless and grey anterior muscles were cut away also. For a long time the general condition of the patient was very bad, fever, multiple abscesses, parotitis, otitis, mastoiditis, and finally a slight degree of phlebitis being present. With some difficulty the authors were able to extract from the patient the information that she had taken ergot for the purpose of inducing abortion. In her case the drug had produced two types of ergotism, the convulsive and the gangrenous. Examples of this kind were met with more commonly formerly than at the present day.—*The Hospital*.

The Vomiting of Pregnancy

Pinard lays stress upon the importance of the pulse in determining the treatment to be followed in the vomiting of pregnancy. Vomiting occurred in 42 per cent. of all pregnancies coming under his notice, and various therapeutical methods have been employed to arrest it. He considers the acceleration of the cardiac pulsations to be the first manifestation of the toxæmia which causes the vomiting, due probably to a poison secreted by the ovary or by the ovum. In all cases of vomiting, attention should be directed to the pulse, and when, in spite of rest, milk diet, and oxygen inhalations, the pulse reaches 100 and remains there or above it, even without any induction of abortion.—*The Canadian Practitioner & Review*.

Pruritus of the Vulva in Pregnancy.

Rudaux finds that pruritus is a common trouble among pregnant women, and that it is often so aggravated as to entail loss of rest and sleep, and to induce pronounced nervous irritability. In some cases the cause is without doubt the presence of more or less well-marked discharge, but he has found sugar in the urine of all the pregnant women who have complained of discomfort and irritation of this part. He permits no ingestion of sugar or sweets, and prescribes for them Vichy water as a drink. A local application of hot water, with 10 grams of chloral, is made four times a day, the parts being afterwards treated with an ointment of ichthyol 10 grams, and benzoin. A few days later a powder made up of zinc oxide, bismuth and talc will be found useful. If there is any leucorrhœa a morning and evening douche containing 20 grams of sodium borate is prescribed.—*The Canadian Practitioner & Review*.

LARYNGOLOGY AND OTOTOLOGY.

The Treatment of Enlarged Tonsils and Adenoids.

G. F. STILL, M.D., F. R. C. P.—The mere fact that adenoids or enlarged tonsils exist is not an indication for treatment of any kind, much less for operation. The criterion is: Are they producing harmful results? The surgeon passes his finger into the naso-pharynx and finding, as he thinks, that the pharyngeal tonsil is more easily felt than normal, diagnoses adenoids and recommends operation, although there are perhaps only the slightest symptoms and these possibly in doubtful relation to the adenoids. Passing the finger into the naso-pharynx is terrifying to children and as a rule is unnecessary. Adenoids, which so far fail to declare themselves by symptoms as to require digital examination to determine their existence, do not require treatment. After puberty they undergo involution. If they are merely associated with tendency to "catch cold" or if tonsillitis recurs on one or two occasions, without any affection of the ears or other complication, there is no need to rush to operation. Possibly further enlargement may occur and render operation necessary, but the harm of waiting until this occurs is less than that of an unnecessary operation. It may be said that the waiting entails risk of an ear affection, which is perhaps the most serious of all the direct evils from adenoids or enlarged tonsils. But one of the occasional results of operation is otitis media, set up no doubt by the inflammatory reaction

in the naso-pharynx. Further, the operation is not without danger to life, from hæmorrhage, sepsis, shock, or the anæsthetic. The death may be attributed to the so-called "status lymphaticus," of which enlarged tonsils and adenoids are said to be signs. It follows that subjects of these affections are just those in whom an operation is to be avoided, if possible.

The indications for operation are as follows:—

1.—Recurring ear-ache and still more slight deafness, even if it occurs only when the child has a cold. One attack of ear-ache does not necessitate operation.

2.—In some cases the chief harm resulting from adenoid or tonsillar obstruction is general ill-health; these children are pale or of pasty complexion, partly no doubt from deficient aeration of the blood, but partly from lack of refreshing sleep, for many sleep restlessly, wake frequently, and are dull and heavy-eyed, perhaps nervous and peevish, in consequence. One of the gratifying results of operation in such cases is the marked improvement in the sleep.

3.—Large tonsils with frequent and harassing recurrence of acute tonsillitis may call for operation.

4.—Similarly there are cases in which catarrh starting in the naso-pharynx spreads to the bronchi repeatedly, so that it may be necessary to remove adenoids to prevent the recurrence of bronchitis. The writer has felt tempted to advise the operation in some cases of laryngitis stridulosa and asthma associated with adenoids and enlarged tonsils, but the effectiveness of medicinal treatment has deterred him unless there were other reasons for the operation.

5.—Another sufficient reason for operation is deformity of the chest resulting from throat obstruction. The child with a constantly open mouth, rounded shoulders, head poked forward, narrow chest, pigeon breast or depressed sternum, requires operation.

6.—One serious result to which perhaps not enough importance is attached is enlargement of the glands at the angle of the jaw. Whether the tubercle bacillus gains access to these directly through the pharyngeal or faucial tonsils, or comes to them *via* the blood, there can be no doubt that the lymphatic glands, once enlarged, are particularly liable to become a nidus for tubercle. Therefore, especially in the child of tuberculous family, or of known tuberculous tendency, enlargement of the glands from these throat sources should raise the question of removal of adenoids and tonsils. But caution is necessary; the question is often not

raised until the glands are already more or less evidently caseous and perhaps on the verge of softening. It is a difficult point to decide whether immediate operation should then be done upon the throat, even though the condition there obviously will necessitate operation sooner or later. There is a risk that by inducing a temporary inflammatory condition in the throat the glands may be stirred into further activity and the last chance of their subsidence be extinguished. Probably it is best to wait and send the child to the seaside under medical supervision. If the glands subside, the tonsils and adenoids can be removed. If the glands do not subside they can be removed, and after the wound has healed and the child has been away again to convalesce, the throat can be dealt with.

Enlarged tonsils are often associated with rheumatic affections. Whether rheumatic infection can be prevented by removal of the enlarged tonsils has yet to be determined. The ordinary partial removal of tonsils does not prevent the recurrence of rheumatism in a child who has previously suffered.

One hears of such troubles as night-terrors and enuresis having been stopped by removal of adenoids or large tonsils. But the mere presence of adenoids or enlarged tonsils does not preclude successful treatment of night-terrors or enuresis by simple medicinal measures. On the other hand, these operations often have no effect whatever on enuresis; sometimes they appear to aggravate it. Moreover, in the few instances in which the writer has known the enuresis to stop immediately after the operation it has generally recurred subsequently.

Epilepsy is never caused primarily by enlarged tonsils or adenoid hypertrophy, but it seems only reasonable that the ill-health which is produced by naso-pharyngeal obstruction may aggravate the tendency in a child already disposed to epilepsy. In a few cases operation on the throat seemed to diminish the attacks greatly.

When operation is necessary the child's condition, apart from its naso-pharynx, must be taken into account. It is exceedingly common in all classes, and perhaps specially in mouth-breathing children, to find carious teeth and foul stumps. The dentist should deal with such, and if possible get the mouth into a cleaner and healthier condition before any operation on adenoids or tonsils is done. It is never wise to recommend operation soon after acute tonsillitis, for the inflammatory enlargement may gradually subside within 3 or 4 months so that operation becomes unnecessary. When a child is in a highly nervous state, as shown, for instance, by the presence of habit-spasm, it is better to wait unless there are any symptoms which make

the operation urgent, for it entails a certain amount of nervous shock, especially to the timid, nervous child. Habit-spasm may be markedly aggravated and the child may fall into a state of morbid nervousness, from which he may not recover for many weeks. If choice is possible it is safer to operate during the warm months than in winter, for one of the sequelæ of the operation is bronchitis apparently due to spread of the inflammatory reaction down into the air passages.

Whatever the method of operation complete removal is important. The writer constantly sees children for conditions, generally catarrhal, connected with the throat, who are said to have had their tonsils and adenoids removed. The removal has been very incomplete; a certain amount both of the pharyngeal and of the faucial tonsils has been removed, and the stump left is perhaps even more ragged and irregular than the original tonsil, with the result that bacteria are still caught in its crevices, and recurring catarrh still troubles the child. The results of enucleation seem the most satisfactory, but in the hands of an expert tonsillotomy may be to all intents and purposes tonsillectomy.

The slighter catarrhal conditions associated with adenoids are amenable to treatment by local applications. Children of about 8 or more will use successfully a lotion to be sniffed up the nostrils night and morning; this is less frightening than syringing. The writer generally directs that a small medicine glass is to be filled with the warm lotion and the child is to "drink the lotion through his mouth." A useful formula is: sod. bicarb., borax, sod. chlorid. 33 gr. xv, glycerin 3j, aq. ad. 3j, a table-spoonful to be used with 2 table-spoonfuls of warm water; or boroglyceride, a teaspoonful in 4 oz. of water, may be used. Probably an alkaline lotion is generally most useful as tending to wash away mucous secretion more readily. For those who are not old enough or are too timid to use a lotion in this way a very fine spray or vaporiser can be used. The fine sprays in which an antiseptic, such as oil of eucalyptus, is mixed with an oily base, such as liquid paraffin, are particularly useful, as the child does not feel the spray as fluid and consequently is not frightened, and the oily material remains in contact with the parts longer than a watery solution.

Whether the tonsils can be diminished in size by any local application is doubtful. They may become smaller while astringents or antiseptic paints are being applied, but tonsils which have become swollen by some recent tonsillitis may slowly decrease without local treatment, until after several months there may be practically no enlargement. On the other hand, there are enlarged tonsils of hard fibrous appearance, the

result of repeated inflammation, which are not likely to diminish in size either with or without applications. None the less when tonsillar enlargement is associated with a tendency to recurring tonsillitis, a persevering application of some antiseptic or astringent twice daily for many months seems to reduce the liability to recurrence, and in this way, at least, favours the subsidence of the enlargement. In the slighter cases of adenoid and tonsil overgrowth breathing exercises may have some value, partly directly by producing a healthier condition of the mucous membrane, and partly indirectly by improving the general health and so reducing the liability to catarrh. But the chief value of breathing exercises is after removal of enlarged tonsils and adenoids. Too often one sees the benefit of the operation lost in great measure because no directions have been given as to teaching the child to breathe properly, and he continues a mouth-breather when the necessity is no longer present.

Lastly, the climatic environment may have to be considered. A cold, damp atmosphere, and especially the London fogs, are potent factors in the production of repeated naso-pharyngeal catarrh, whatever may be the bacterial element. The ideal residence for children with the tendency to enlargement of faucial and pharyngeal tonsils is high on a porous soil, allowing rapid drying after rain.—*The Medical Review.*

Cases and Comments.

A Case of Stab Wounds of the Heart, Lungs and Intestine with Remarks.

BY

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A patient aged 38 years, male, Hindu, a butter milk seller by occupation, was admitted into the hospital on 1-12-10 at 11-20 P.M. with a history of having been stabbed on the chest and abdomen by thieves at 8 p. m. that night. The following were the notes taken at the time of admission:—

1. A small incised wound $\frac{1}{2}$ " long and skin deep, situated about an inch above the ensiform cartilage and just to the left of the middle line.

2. A gaping wound $\frac{1}{2}$ " across, skin deep, situated about 3" before the right nipple in the mammary line.

3. Another similar gaping wound of the abdomen $\frac{1}{2}$ " across and $\frac{3}{4}$ " deep obliquely lying at a distance of nearly 2" from the right anterior superior spine of the ileum on a line drawn from it to the umbilicus. The probe went in freely down to the muscles. None of the wounds showed any communication with the serous cavities.

The patient was seen by the medical officer who did not suspect anything serious. The wounds were cleansed with 1 in 20 carbolic lotion, dusted with boric and iodoform and dressed with perchloride gauze. There were no symptoms pointing to serious injuries of the heart or lungs and no pain was complained of in the wounds of the chest. The next day severe symptoms of diffuse suppurative peritonitis set in and the patient's condition was so low that an operation was not undertaken. Patient died two days after admission.

Autopsy revealed the following very interesting facts:—

1. At the region of the fourth costal cartilage over the sternum and to the left of the middle line, there was a punctured oblique wound about $\frac{1}{2}$ " long and $\frac{1}{2}$ " deep running from right to left with gaping edges and full of coagulated blood. Around the wound was haemorrhage into the subcutaneous tissues about 3" vertical and 2" horizontal. On probing the wound appeared to be only superficial, but on taking out the sternum, the tissues of the anterior mediastinum were infiltrated with blood. There were 2 ozs. of liquid blood in the left pleural cavity and the left pleura was injured. On opening the pericardium it also was found to be wounded with about $\frac{1}{2}$ oz. of fluid blood inside it and on the anterior surface of the right ventricle of the heart near the origin of the pulmonary artery, there was a slit like valvular wound about $\frac{1}{2}$ " long, which extended right through its wall into the cavity of the right ventricle. The upper lobe of the left lung was also infiltrated with blood in the area of the wound corresponding to that in the pericardium and pleura.

2. Over the right lower ribs in front between the 6th and 7th costal cartilages was another apparently punctured wound about 2" long, edges gaping and $\frac{1}{2}$ " deep. On exploring this wound, the probe did not go into the pleural cavity, but on examination there was a large irregularly shaped extravasation of blood into the subcutaneous tissues beneath about 6" square. The pleura was wounded with 6 ozs. of blood in the right pleural cavity and the lower half of the lung infiltrated with blood over an area corresponding to the wound in the pleura.

3. On the right side of the abdomen level with the umbilicus and 4" away from it was another vertical wound with gaping edges, $\frac{1}{2}$ " long, from which was exuding a light yellow fluid. This wound appeared to

be nearly an inch in depth vertically and $2\frac{1}{2}$ " deep obliquely down towards the pubis. The probe did not go into the general peritoneal cavities. On opening the abdomen the condition was one of acute diffuse suppurative peritonitis with formation of lymph and a large quantity of thin yellow fluid in each flank. At the site of the wound there were adherent coils of small intestine, glued together to the anterior abdominal wall by thick lymph. In one of the adherent coils was a perforation extending completely into the lumen of the gut, from which liquid contents were escaping. Stomach, intestines and colon were distended and the other organs normal.

Remarks.—I am of opinion that in this case the wounds of the heart and lungs by themselves did not contribute materially to the death of the patient, as there was only a small effusion of blood in both the pleura and pericardium, the true cause of death being acute diffuse suppurative peritonitis, which might have been averted, had the patient been operated immediately after admission, when most probably he would have recovered in spite of the wounded lungs and heart. The important lessons to be derived from this case are:—

(1) In all penetrating wounds of the thorax and abdomen no reliance has to be placed on probing alone, as it may entirely mislead us and fail to indicate the extent of the lesion.

(2) Apparently superficial punctured wounds of the chest and abdomen may really be very serious.

(3) Small punctured valvular stab-wounds of the heart, especially of the thick-walled ventricles need not necessarily prove fatal immediately, unless the coronary arteries are cut. Such cases may even end in complete recovery.

(4) Small penetrating wounds of the pleurae and lungs may not cause pneumothorax or serious haemothorax, if the intercostal arteries are not divided.

(5) If penetrating wounds of abdomen are large, there is usually little difficulty in ascertaining whether the viscera are injured or not. If they are very small, the probe may not give any information as to a lesion of the peritoneum or the abdominal viscera and so it is safer to explore the wound thoroughly by cleaning and enlarging it to make sure if the peritoneum is involved and if so, to ascertain whether any of the viscera are injured. Exploration in a doubtful case should always be done, as it will do far less harm than delaying operation until the diagnosis is made positive by an onset of peritonitis. Once the gut is paralysed as a result of peritonitis, whether an operation is undertaken or not, the patient is sure to succumb.

THE ANTISEPTIC.

MARCH, 1911.

Free Trade in Small-Pox.



THE following reply given to an interpellation in the Madras Legislative Council very recently will be interesting to medical men and sanitarians:—

"Answer 63.—(a) The S.S. *Umfuli* arrived at Madras on the 16th November, 1910. The Government understand that there were three or four cases of small-pox among the returned emigrants, and that about 40 more, mostly children, were found by the Assistant Port Health Officer to be convalescing from measles, the contacts numbering 76. They were landed north of, and outside, the harbour. (b) The patients and the contacts were first sent to the Royapuram Hospital, but as there was no room for them there, they were removed to the Krishnampet Hospital. (c) The Assistant Port Health Officer sent the usual letter to the officer in charge of the infectious wards in the Krishnampet Hospital and to the Health Officer of the Corporation, asking the former to admit the cases, and informing the latter of the action he had taken. No previous intimation was given, as prompt arrangements had to be made for dealing with the cases. (d) The Government consider that the Assistant Health Officer made the best arrangements possible in the circumstances. (e) The question will be considered."

We can give a little more information on the subject. When the patients who were actually suffering from the infectious disease and their contacts arrived at the Krishnampet Hospital (which is a Hospital established by the Madras Municipal Corporation for the treatment of small-pox cases) it was found that there was no accommodation in the Hospital for such a large number of people sent there without any previous notice. Therefore the contacts had to be sent to the Egmore Plague Hospital (there are no plague cases there at present). The patients who were actually suffering from the eruptive complaint were detained at the Krishnampet Hospital, and we have the authority of the Health Officer of the Madras Corporation for the statement that several of them were

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cases of small-pox, while the others were cases of measles. Before we go further into the question let us explain, for the information of our readers, that the sanitary authority for the city of Madras—which is an extensive city of 27 square miles with a population of over half a million—is the Madras Corporation. But there are two small areas within the city which are left out of the limits of the area of the jurisdiction of the Madras Corporation, namely, the Port of Madras and the Fort St. George. The Port is under the Port Trust and the Fort St. George is under the control of the Military authorities. But we are told that even the Port Trust has no sanitary control over the Port. The Port Sanitary Authority is apparently the Port Health Officer who is under the Madras Government. The Port Health Officer has under him an Assistant Health Officer who is the gentleman who, in the opinion of the Madras Government, "made the best arrangements possible under the circumstances." The Madras Corporation is the Local Authority nearest adjoining the Port and yet it has no share in the sanitary control of the Port.

Section 110 of the Public Health Act of 1875 says:—"For the purposes of the provisions of this Act relating to nuisances, any ship or vessel lying in any river, harbour or other water within the district of a local authority shall be subject to the jurisdiction of that authority in the same manner as if it were a house within such district; and any ship or vessel lying in any river, harbour or other water not within the district of a local authority shall be deemed to be within the district of such local authority as may be prescribed by the Local Government Board; and where no local authority has been prescribed *then of the local authority whose district nearest adjoins the place where such ship or vessel is lying.*" (The italics are ours).

The Public Health (Ships) Act of 1885 enacts that this section shall have effect not only for the purposes of the provisions of the Act relating to nuisances but also for the purposes of sections relating to Infectious diseases and hospitals. Under Section 124 of the Public Health Act of 1875 persons on board ship suffering from dangerous infectious disorders may be removed therefrom. Here is the section:—"Where any suitable Hospital or place for the reception of the sick is provided within the district of a local authority, or within a convenient distance of such district, any person who is suffering from any dangerous, infectious disorder and is without proper lodging or accommodation, or lodged in a room occupied by more than one family or is on board any ship or vessel, may on a certificate signed by a legally qualified medical practitioner and with the consent of the superintending body of such hospital or

place be removed by order of any Justice to such hospital or place at the cost of the local authority * * *

We draw the attention of our readers to the provisions of the above-quoted section. Under that section you can only remove a small-pox patient, for instance, who has not a room of his own, and the removal can only be done if certified by a legally qualified medical practitioner, and with the consent of the superintending authorities of the Hospital on an order from a Justice of the Peace.

Then again look at the next section of the Public Health Act. Section 125 of the Act says:—"Any local authority may make regulations (to be approved by the Local Government Board) for removing to any hospital to which such authority are entitled to remove patients, and for keeping in such Hospital, so long as may be necessary, any persons brought within their district, by any ship or boat, who are infected with a dangerous, infectious disorder" &c., &c.

We have quoted extensively from the English Public Health Act, and there may be people in Madras who might say that Madras is not England and therefore the provisions of an English Act will be unsuitable for Madras. If there are any people who hold such views, then for their information we may say that most of the Health sections of the Madras Municipal Act are conveyed wholesale from the English Public Health Act, which is proof positive that in the opinion of the local legislature the provisions of the English Public Health Act are suitable for application to Madras.

Now, as to the important points connected with the controversy. In the first place, we hold that it is an unsatisfactory arrangement to have two different sanitary authorities for the Port and City of Madras. That dual arrangement can only result in complications to the detriment of the sanitation of the city of Madras. The remedy is the application of Section 110 of the English Public Health Act to Madras or the creation of a Port Sanitary Authority in which the Madras Corporation is adequately represented. Secondly: the enforcement of the principle that no cases of infectious diseases are brought into the Municipal limits of Madras unless the Health Officer has been previously notified about such removal and until the arrangements for the removal of such patients and for their reception in a proper Hospital have been approved by the Health Officer.

The opinion expressed by the Madras Government that the Port Assistant Health Officer made the best possible arrangements under the circumstances is not scientifically correct. We do not expect scientific

knowledge in the members of the Madras Government. But a Government ought to have its medical advisers, and any medical man worth the name would tell the Government that the proper course for adoption under the circumstances would have been to keep the ship in quarantine and not to land any of the infected patients or their contacts till proper arrangements had been made for their safe removal and their proper accommodation in a Hospital. If any medical man did advise the Madras Government that it was a justifiable procedure on the part of the Assistant Port Health Officer to send small-pox patients from the Harbour to the Monegar Choultry Hospital and from there to Krishnampet Hospital, thus traversing practically the whole length of the city of Madras, without giving any previous intimation even to those Hospital authorities, then it is about time that the Government granted that medical officer "study leave" to enable him to attend an elementary course of lectures on Public Health.

There is another and a very important point connected with this question. The infected patients and their contacts who were landed were emigrants returning from Natal. The Madras Corporation are only responsible (under Section 362 of the Municipal Act) to construct and maintain hospitals for the treatment of infectious diseases occurring in the city. These cases did not occur in the city. They were dumped down in the city. The local agents of the South African Emigration business ought to have arranged accommodation, to the satisfaction and approval of the Health Officer, for the reception of these infected patients and their contacts. If insanitary action like the one disclosed in this unfortunate affair is accepted and approved by the Local Government, there will be no sanitary progress in this Presidency. And there are Members in the House of Commons who are inquisitive enough to ask the Under-Secretary for India why the sanitary condition of India has not improved. Why indeed? Our wonder is why it is not worse than what it is!

CORRESPONDENCE.

The Pay of Sub-Assistant Surgeons.

SIR,

It is really unfortunate that you have not besides publishing a letter or two on the subject from correspondents, yet raised your voice in moving the Madras Government to raise the pay of the Sub-Assistant Surgeons in Madras to the Maximum Scale sanctioned by the Government of India—a scale that was unhesitatingly adopted by Bengal and

other provinces. When it is acknowledged on all hands that Sub-Assistant Surgeons trained in Madras are in no way inferior to their compeers in other parts of India, say that they are somewhat superior to them, the irony of the thing becomes inexplicable.

That this action is causing great heart-burning and discontent amongst all the Sub-Assistant Surgeons in the Presidency goes without saying and that it is only their inherent good nature, loyalty and submissiveness and their belief that their condition will soon be mended and brought to the level of their brother officers in other provinces, that prevent them from submitting memorials and worrying the Government is self-evident.

The subject has been so well and ably discussed by "Fair Play" in the September issue of your journal that I need not take up your space in reiterating them and the object of these few lines is only to serve as a reminder.

Will not the Surgeon-General or some members of the Government official or non-official, move in the matter and raise the Sub-Assistant Surgeons of Madras to the status and incidentally to the emoluments that have been sanctioned elsewhere in India or will they go on seeing their own subordinates stamped with inferiority though their training and attainments are acknowledged to be superior to their brother officers in other parts of India?

It need hardly be said that the status of an official in India more or less depends upon his pay. You have also to remember that some of these Sub-Assistant Surgeons have to go out of their Presidency and serve with those others who have been given the full benefit of the Government of India's decision and that this decision itself is not considered by anybody to be too liberal or generous. Take for instance Port Blair where men are sent periodically from Madras. A Sub-Assistant Surgeon of Madras on the top of the 80 Rupees grade—the highest grade in the Service—if he unfortunately happen to serve in Port Blair along with one from Bengal who is his junior by several years but just entered into his highest grade will find himself much lower in the estimation of the people there because his pay will be Rs. 20 less than his Bengal colleague in spite of the former's seniority, &c. This is not an improbable contingency but a stern fact because even now there are Civil Sub-Assistant Surgeons of Madras serving there, though not of the senior grade as I have illustrated above, but of lower grades, one of whom up till this preferential treat-

ment was put in force in India, was getting the same salary as his Bengalee compeer but who now finds himself drawing Rs. 5 less though he is somewhat senior in service to, and though in consequence he began to draw the increased pay of the grade earlier than the Bengalee colleague.

As in the case of Port Blair where this distinction will naturally be more keenly felt than in Madras where they may not have to work side by side with more fortunate men from other parts of India, so will it be everywhere else outside the Presidency till this unmerited distinction is removed.

If this distinction is due to any variation in local circumstances such as private practice, price of food stuffs, &c., then an increased or diminished local allowance suitable to these circumstances would be the most reasonable remedy but a difference in Grade Pay in the several British Provinces where these men were hitherto treated alike even when some men of certain provinces (certainly not the Madras men nor the Madras province) did not display much partiality for the English language but contended in qualifying themselves in their vernaculars, is certainly a solid grievance and a heart-rending, which it is hoped proverbial British fairness will immediately detect and remedy.

JUSTICE.

ACKNOWLEDGMENTS.

We acknowledge, with thanks, receipt of the following journals:—

The Polyclinic. The Bristol Medico-Chirurgical Journal. The International Journal of Surgery. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The Good Health. The Indian Medical Gazette. The Practical Medicine. The Sanitary Record and Journal of Sanitary and Municipal Engineering. The Northumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Medical Review of Reviews. The Post Graduate. The Therapist. The Canadian Practitioner and Review. The Australasian Medical Gazette. The Caledonian Medical Journal. The Canadian Medical Journal. The Monthly Cyclopædia of Practical Medicine. The Buffalo Medical Journal. The Ophthalmoscope. The Dental Era. The Interstate Medical Journal. The Medical Notes and Queries. The Calcutta Medical Journal. Folia Therapeutica. The All-India Hospital

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Original Articles.

* THE MODERN CONCEPTION OF TETANUS.

BY

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DO not propose to repeat the well-known text-book descriptions of the causation and symptoms of this terrible disease, with which the reader will already be familiar. It is rather my intention to mention a few points of interest which have recently come to light, and to consider what bearing they have upon the important questions of prevention and treatment.

It is known to all that the disease is caused by a bacillus; that this bacillus forms spores at one end like a drumstick, and that these spores are exceedingly resistant to heat and chemicals. A boiling of fifteen minutes is necessary to kill them. They survive immersion in 1 in 20 carbolic for ten hours, or in 1 in 1,000 perchloride of mercury for three hours. The bacillus is very common in superficial soil, especially if it is liable to contamination by the droppings of large animals. The intestines of cattle, horses and sheep frequently contain it. Far and away the commonest cause of tetanus, then, is an earth-infected wound. It is one of the few diseases which appear to be becoming more frequent.

Considering how abundantly the organism is distributed in the soil, and how often wounds become contaminated with earth, it is surprising that tetanus is not much commoner than it is. It has been shown, however, that the mere injection of a few of the drumstick bacilli will not cause the disease. They are not able to obtain a lodgment unless

* Specially contributed to *The Antiseptic*.

ordinary pure cocci have also been inoculated. Moreover, the tetanus bacillus is anærobic, and cannot do harm in a wound which is thoroughly exposed to the air.

Should it, however, find a corner of a suppurating wound in which to develop, it will multiply in numbers, and after about nine days (the limits being three to thirty days), a soluble poison, tetanus toxin, will have been absorbed in sufficient quantity and in such a manner as to reach the central nervous system. This same toxin can of course be obtained by making a gelatine culture of the bacillus, and if injected into an animal the symptoms of tetanus would appear within a few hours instead of after nine days.

In this connection it has recently been shown that we have a remarkable and very significant fact to deal with. Most toxins with which we are acquainted are absorbed by the lymph, or by the blood stream. *Tetanus toxin travels to the brain or cord, not by the vascular system, but up the sheaths of the nerves* supplying the wounded area. Definite changes are produced in the nerves as this takes place. They are found to be swollen, red, softened and bruised. If the wound affects the face, the facial nerve will be nipped as it passes through the aqueduct of Fallopius, and the symptoms of tetanus will be masked to some extent by a unilateral facial paralysis. This should be widely known, or serious mistakes may arise.

Having reached the nerve cells in the brain and spinal cord, the toxin forms with them a definite compound, so much so that if a poisonous dose of tetanus toxin is mixed with a brain emulsion, it ceases to be poisonous if injected into an animal; it has all been used up by the brain cells.

We will not stay to recall the mode of preparation of tetanus antitoxin, so-called "anti-tetanic serum." Let us emphasise, however, that it is a tetanus *antitoxin*. It is able to unite with and to destroy the tetanus toxin, but it has absolutely no control over the tetanus bacillus. It is known, to quote an analogy, that diphtheria bacilli will grow freely in diphtheria antitoxin. *Tetanus antitoxin travels not by the nerves, but by the vascular system*, to reach the brain and cord. Consequently, if toxin and antitoxin are injected together, the antitoxin will reach the brain cells in a few seconds, whereas the toxin, travelling by the nerves, takes much longer—unless, of course, it should have been injected directly into a vein.

Let us consider, then, what we expect antitoxin to do, if we do not give it until the signs of tetanus are already established. We hope that

it will disrupt the combination between the nerve cell protoplasm and the toxin, and that it will neutralise the toxin. It is not surprising that the task is usually beyond its powers.

On the other hand, the injection of the antitoxin before symptoms have appeared rests upon a sound theoretical basis, and the results of experiment on animals show it is always possible to prevent the onset of tetanus, but very rarely possible to cure after the disease has manifested itself, by giving antitoxin.

Before turning to the clinical evidence concerning treatment by antitetanic serum and other means, it may be of interest to notice a very ingenious paper recently published by Richardson* on Post-operative Tetanus. He points out that it has been usual to blame the catgut used for ligatures, and ventures to doubt this hypothesis; indeed, he believes that none of the instruments are to blame, but that a bacillus, either of tetanus itself or more probably allied to it but different, is present in the alimentary canal before operation, and which is stirred into activity. He points out that in most cases the catgut is sterile and does not produce tetanus after inoculation into animals, and also that a bacillus such as he describes does inhabit the intestine of sheep, and produces symptoms closely allied to tetanus called the "louping ill." Moreover, post-operative tetanus appears not to occur in the south of England, nor does the "louping ill;" both are common in Northumberland.

The theory is interesting, and well worth working out; it may be true that some of the cases described were not due to tetanus, but it is equally certain that tetanus has been conveyed by instruments insufficiently sterilized. An infected artery forceps has been known to cause fatal tetanus in seven or eight patients following. Inoculation of another piece of the catgut into animals might not cause the disease even if the patient had really been infected by it, because unless cocci are introduced at the same time, the tetanus bacillus is usually inert. In a case known to the writer, a lady long resident in Bristol went to Ireland for a hysterectomy, and died of tetanus; if she carried the bacilli with her, post-operative tetanus should sometimes occur in Bristol, which it does not. So we must still be careful to boil instruments for at least fifteen minutes before use. If a temperature of 110° is reached, a shorter time will suffice.

THE TREATMENT OF TETANUS:—I pass over with bare mention such matters as cleansing of the wound, seclusion, quiet, sedatives, and

* *Brit Med. Journ.*, Aug. 17, 1909.

croton oil if necessary. Chloroform is sometimes an infinite comfort to the unhappy sufferer. Shall we give anti-tetanic serum, and, if so, how? I have before me the statistics of 200 American hospital cases, personal recollection of some 30 cases treated in Bristol hospitals, and the current trend of modern surgical literature.

(i) *The Effect of Ordinary Doses.*—After one has watched a patient for a day or less, with a little experience it is easy to place him in the mild and chronic class, or in the severe and acute class. Of the American cases treated by ordinary doses (20-50 cc.), 85 per cent of the acute cases died, and 40 per cent of the subacute and chronic. We may compare with these the figures for the days prior to the advent of serum: at Guy's Hospital, from 1825 to 1857, of 72 cases, 60 died, that is, 83 per cent; at St. Bartholomew's, from 1878 to 1893, of 31 cases, 20 died, that is 64 per cent. Only once or twice have I felt that the serum saved a patient who looked likely to die.

The value of the serum in ordinary doses, when spasms have commenced, is not proven.

(ii) *The Effect of Immense Doses.*—Of 20 American cases treated with doses over 500 cc., 15 recovered; mortality 25 per cent. It is expressly stated, however, that they were of mild type, on the whole. When serum is to be given, therefore, we should give large doses. These are unfortunately very expensive.

(iii). *Intracerebral and Intraspinal Inoculation.*—The results obtained by the advocates of these methods appear to be a little better than those following the same dose given hypodermically, but both are dangerous; cerebral abscess has more than once been caused.

Only two other methods of treatment appear worthy of mention. BACCILLI and the Italian school claim good results after hypodermic injection of 10 or 15 drops of a 3 per cent solution of carbolic acid thrice daily; some now give larger doses.

We can speak with greater confidence of MELTZER'S magnesium sulphate treatment, which has undoubtedly saved some really severe cases. In a patient at the Bristol Royal infirmary the relief was most marked, and quite evidently due to the injection. This method is rapidly supplanting serum treatment in America.

An injection of 3 cc. of a boiled 25 per cent solution of magnesium sulphate is given into the spinal canal between the 2nd and 3rd lumbar spines, and repeatedly daily. The spasm is usually allayed at once, and the next injection may be given if and when it returns.

Prevention of Tetanus.—Remembering that the bacillus can only work in corners where it is away from oxygen, it is very important that every wound soiled by dirt should be most carefully cleaned, and no antiseptic will be better than hydrogen peroxide. The effervescence of oxygen gives it a great advantage over other antiseptics, especially in preventing tetanus; it brings particles out of every corner, and if repeatedly applied kills off the bacilli.

The question of giving a prophylactic dose of anti-tetanic serum to every patient with a wound infected by earth is one of great interest and importance. Theoretically it is excellent advice; judging by the results of animal experimentation the results should be excellent. Experience in America, where the practice is very largely followed, shows that it is by no means infallible in averting the disease. I have notes of 18 cases where, in spite of the injection at the time of the accident, symptoms of tetanus eventually developed. It is impossible to say how many more would have suffered but for the injection. There is some evidence of its value, however, in that in almost all the cases the incubation period was greatly delayed, and of 8 instances in which the result is stated, only two died.

Last year a remarkable case occurred at the Bristol Royal Infirmary; a boy with a very dirty wound was given anti-tetanic serum at once, and 36 hours later symptoms of tetanus set in. The leg was amputated (it was badly crushed) and more serum given. He made a rapid and complete recovery.

So short an incubation period opens up the question whether the commercial antitoxin may not sometimes contain more toxin than antitoxin. If, however, there was really an introduction of tetanus bacilli at the time of the injury, it must be regarded as a brilliant success for the antitoxin, because cases with a short incubation period are ultra-virulent.

*SYPHILIS.

BY

J. BERNARD DAWSON, M.B., B.S., F.R.C.S.

Of late years interest in this disease has been quickened by the part it has played in the elaboration of serum therapy.

The discovery of the *Treponema Pallidum* as the specific organism of the disease, the successful inoculation of apes and the discovery of a method of serum diagnosis, have all helped to bring the disease prominently before the profession. Since Wasserman's Serum reaction for

* Specially contributed to *The Antiseptic*.

syphilis has proved satisfactory in 80 per cent. of cases of undoubted syphilis, there can be no doubt as to its value and correctness.

This reaction depends upon a series of complicated processes which the serum of blood undergoes under certain conditions. It is difficult to describe it without trespassing upon the fields of pathological research rather extensively, but briefly the processes are these:—

1. If the blood of one species of animal, say a fowl, is infected into a member of another species, say a rabbit, the serum of the latter gains the power of dissolving the corpuscles of fowl's blood when added to it in a test tube.

2. This phenomenon is called hæmolysis and the substances which bring it about are called hæmolysins.

3. If such an hæmolytic serum is heated, it is found to lose its power of hæmolysis, but the property returns if a little unheated normal serum is added.

Thus the hæmolytic properties seem to depend upon two elements:—

- (a) The complement, present in normal serum, which is destroyed by heat.

- (b) The copula which is developed in immunised animals.

4. It has been found that syphilitic antigen represented by an extract of syphilitic foetal liver has the power of uniting with syphilitic antibody present in the serum of a patient infected by the disease.

If this serum is previously heated the combination cannot take place as the complement is thereby destroyed. This absence can be remedied, however, by the addition of normal serum to the mixture.

5. Two tubes are prepared one containing, extract of syphilitic liver, normal serum and inactivated serum from the suspected patient, whilst the 2nd contains inactivated immunised hæmolytic blood from a rabbit and fowl's blood as described under 3. The contents of these two tubes are then mixed together and incubated. If the patient is suffering from syphilis no hæmolysis of the fowl's blood corpuscles will take place, whereas if the disease be not syphilis, hæmolysis will occur.

The 2nd tube needs for hæmolysis some unaltered serum, if the patient's serum contains syphilitic antibody then this combines with the other two constituents of the first tube namely the syphilitic liver extract and the normal serum, but if not then the normal serum is left unchanged and can be utilised by the contents of the 2nd tube for the hæmolytic change.

Roughly this is the method adopted for the Wasserman serum reaction for syphilis. Many complicated details of laboratory technique have been omitted together with any mention of control tubes which are always investigated with the reaction test tubes.

Congenital Syphilis.—The old term of hereditary syphilis is a misnomer and should be abandoned, for scientifically considered, there is no such thing as hereditary conveyance of the disease. The infant acquires the disease during intra-uterine life, or the separation of the placenta, by transmission from the mother. Much doubt exists as to the method of this maternal transmission, and still greater doubt as to the possibility of direct paternal transmission without infection of the mother.

Sperm of Direct Paternal Transmission.—At one time, it was considered possible for the infection of syphilis to be conveyed to the offspring in the spermatozoa of the father. This is now regarded as incorrect; the *Treponema Pallidum* is $\frac{1}{4}$ the diameter of a red blood cell in length and it is difficult to believe it could become entangled with spermatozoa and to infect an ovum.

It is possible that the syphilitic organism may be present in the semen and that the mother may thus be infected and that from her the child may receive its infection. Nevertheless, results beneficial to the children follow antisyphilitic treatment of the father. Again an exacerbation of the disease in a father may be followed by syphilitic offspring even though healthy progeny have been begot before.

But in both these cases in all probability the infection is *via* the mother and not direct from sperm cell to offspring.

Maternal Transmission.—There is, of course, no doubt as to transmission of syphilis from mother to child; the main points in the elucidation of the problem are:—

1. The mother may transmit the disease when the father is healthy.

2. A mother may remain free from evidence of the disease and give birth to syphilitic children. These children she can nurse without contracting the disease, whilst a wet nurse would be liable to inoculation. This is known as *Colles's Law*. There have been exceptions to this law quoted, but they are few and of doubtful value. By this law the mother of a syphilitic infant is immune to the disease.

This does not prove either that she was infected during pregnancy or that she has acquired immunity from the foetus without actual infection.

3. Intra-uterine infection of the child is most likely to occur early in pregnancy before the differentiation of the placenta has advanced.

4. The later the stage of syphilis in the parent, the milder the effects on the offspring; thus a common history is that of miscarriages at later and later stages, followed by a still birth and subsequently by a living full-term child.

5. A healthy child may be followed by a syphilitic one; in such a case intercurrent infection of either or both parents has to be sought for, or else the male progenitor may be different for the two children.

The Contagiousness of Syphilitic Infants.—Congenital Syphilis has long been considered a highly contagious form of the disease; more recently this opinion has undergone a change and many authorities now consider it little if at all contagious.

Thus GUNZBURG of Moscow stated that 31 healthy wet nurses fed 120 syphilitic babies for a gross period of 395 months and yet all remained perfectly healthy. Again COURTS has only seen one doubtful case of infection of a wet nurse. STILL has not seen one, neither has CAUTLEY.

The Pathology of Syphilis.—Syphilis is now to be considered as a diffuse blood infection with a specific micro-organism, the *Treponema Pallidum*, which initiates a diffuse cell proliferation in the perivascular issues of minute blood-vessels.

This inflammation shows multiple lesions, similarity of type modified by the tissues in which it occurs.

Blood vessels may be obliterated by contraction of this perivascular connective tissue or by a definite proliferation of the endo-arterial cells. There is a constant tendency to such contraction or fibrosis which may so compress the parenchymatous elements of an organ as to render them unrecognisable. The newly formed cells also tend to aggregate to form masses giving rise to syphilomata or gummata. There are marked blood changes, the red cells being deficient, the haemoglobin content being diminished, nucleated red cells being present and a leucocytosis especially of myeloblasts and eosinophiles being produced.

The Symptoms of Congenital Syphilis.—The pregnancy may end in:—

1. A macerated foetus.
2. A dead foetus.
3. A still-born full-term child.
4. A premature living child which lives only a few hours,

5. A child showing signs of the disease.
6. An apparently healthy child.

A child born bearing the signs of syphilis is an indication of severe infection.

The child is feeble, ill-nourished with wrinkled skin and a sub-normal temperature. It may manifest all or any of the following phenomena:—

1. An eruption of papules or pustules.
2. Bullous eruptions or pemphigus.
3. Jaundice.
4. Snuffles.
5. Enlargement of liver or spleen.
6. Epiphysitis.
7. Choroido-retinitis.

Death supervenes in from 1 to 4 weeks.

Frequently the new-born shows no signs of the disease which manifests itself during the first two months, sometimes in the third and rarely in later months.

Snuffles.—One of the earliest signs appearing in nearly 75 % of cases. It usually appears just before the rash, commonly within 4 weeks of birth.

It is due to a sub-acute coryza and causes nasal obstruction and thus difficulty in suckling.

The discharge is at first serous, later yellow, muco-purulent, perhaps blood-stained, and always irritating.

The nose is blocked by swollen mucosa and crusts of inspissated discharge.

The bridge is thickened, the hip swollen and tilted upward, giving rise to the typical pug-nose.

The catarrh may extend to the pharynx and larynx and give rise to difficulty of swallowing and respiration.

The course of the rhinitis is from 2 to 3 weeks.

Gummata in the sub-mucosa and periosteum may give rise to ulceration and necrosis, causing a collapse of the nasal bridge.

Rashes usually appear a few days after the snuffles.

The principal features of the rash are:—

1. Site:—External genitals, perineum and buttocks; feet and hands, forehead, legs, trunk and arms, and especially the mucocutaneous junctions.

2. Polymorphosin.
3. Absence of itching.
4. Coalescence of spots into areas which are liable to superficial ulceration.

The varieties of the rash are:—

1. Simple erythema which, to be characteristic, must spread beyond the napkin area where it usually commences.
2. A typical dry desquamating rash after which flakes of cuticle fall off, leaving smooth and dusky patches of skin.
3. Macular, papular or pustular eruptions, any or all varieties being present.
4. Pemphigus or bullous rash which is peculiar to the congenital form of the disease. It is a sign of severe infection.
5. Superficial ulceration of mucosa and muco-cutaneous junctions.
6. Mucous patches and condylomata which are really papules in moist contiguous places such as the perineum, vulva, axillæ, etc.
7. Rarely the eruptions may appear in a tinged or serpiginous form.
8. Cutaneous gummata.

Wasting—is a most important sign and, if present in the first 3 months without other reasonable cause, most suggestive. It may be very severe and rapid, beginning soon after birth and without definite post-mortem changes.

A baby healthy and well-nourished at birth may waste in spite of careful feeding until it manifests the characteristic appearance of a syphilitic infant, viz:—

1. Loose redundant skin hanging in folds.
2. Dusky coffee coloration.
3. Thin atrophic dry skin.
4. Irritable, peevishness.
5. Enteric disorders.
6. Epiphysitis, etc. etc.

(To be continued).

CONVULSIONS: A CLINICAL INVESTIGATION.*

BY

G. RAMAN PILLAI, M.B., CH.B. (EDIN.)

A convulsion is a sudden attack of spasmodic contractions of the voluntary muscles of the body. The contractions are violent, and beyond the control of the will. They may be limited to a few muscles or sets of muscles only; or they may involve all the voluntary muscles of the body. Consciousness may be lost in a greater or less degree, according to the cause or intensity of the fits. As an interlude—an eventful and a stormy interlude—convulsions may occur towards the final stages of the tragedy of any acute illness. Or, they may not represent a symptom of much serious import, as sometimes in young children, and in some of the functional manifestations of adults. In any case, the gravity of the condition depends upon the frequency of the fits and the strength of the patient.

The dangers of convulsions are, exhaustion, mental derangement, and sometimes paralysis. Being an abnormal state of muscular excitability, and not confined to any one muscle alone, we look for the cause to some structure that puts all these muscles into activity—and we arrive at some nerve, the stimulation of which brings on spasms of the muscles concerned. And, as more than one set of muscles (each set possessing a special nerve supplying them) are disturbed during the seizure, we attribute the spasms to the stimulation of certain parts of the nervous system (the centres) from which the particular nerves take origin. If all the muscles in the body are convulsed, it follows therefore that all the various motor centres in the body are stimulated. The various centres being scattered about in different parts of the nervous system, a simultaneous stimulation of all of them arises when the all-controlling centre—the brain—is stimulated. As we know that the nervous system consists of the chief centre (the brain) and several subsidiary centres in the spinal cord, we shall easily understand, (1) that stimulation of the entire motor centre of the brain would excite contraction of all the voluntary muscles of the body; (2) that stimulation of only one part (say, the centre for the arms) of the motor area of the brain would excite contractions in the corresponding muscles only (e.g., the arms); and (3) that contractions may be produced by stimuli applied to the spinal centres alone without disturbing the brain. We may thus get, (1) general convulsions like epilepsy due to stimulation of the entire motor cortex of the brain; (2) localised convulsive spasms (as in Jacksonian epilepsy); and (3) spinal convulsions (as in strychnine poisoning and in tetanus).

* Specially contributed to *The Antiseptic*.

In every case, the stimulation operates on the motor nerve cells aggregated together in the different centres.

We may here refresh our memories concerning the nerve cells. These are located in the centres; and their axones form the nerves that go to the muscles. The motor cells are found in the highest motor controlling area of the brain—the cortex. They are also found in other situations of the brain—the nuclei of the cranial and other nerves (*e.g.*, the Nucleus Ambiguus of the Vagus), in the Pons and the Medulla. Others are found in the spinal cord.

The main point for us to remember is, that, an ordinary stimulation of these motor cells would produce an ordinary contraction of the muscles supplied by their processes, and that, an extraordinary stimulation (or irritation) of these cells would produce an extraordinary contraction (or *convulsion*) of those muscles. Convulsions, therefore, are the result of *irritation* of these nerve cells, wherever situated.

What are the *causes* of convulsions? In other words, what are the causes that lead to irritation of the motor cells of the nervous system? These cells have, in some cases, an inherent irritability in themselves. Whatever the causes may be, they seem to store within them a large amount of energy which they periodically discharge, with explosive violence, into the muscles that consequently go into convulsions. There being no discoverable cause of irritation near the cells, this form of irritability is named "*Functional*" irritability; and it is best exemplified in Idiopathic Epilepsy and Hysteria.

Where there is a discoverable cause, the irritation of the cells may be traced to one or other of the following conditions lying in close proximity to the cells that are irritated:—

Organic causes:—Hæmorrhage; embolism; chronic degeneration of the nervous system; tumour; inflammation (abscess, meningitis); cerebral syphilis; hydrocephalus.

Another set of causes operates by the irritation produced in the cells by certain toxins circulating in the blood. These may be termed the *Toxic Causes*:—

Uræmia; diabetes; cholæmia; eclampsia; tetanus; alcohol; drugs (strychnine); rickets; acute fevers, especially in children; venous blood. The irritation of certain nerve endings may reflexly irritate the central nerve cells:—

Reflex causes:—Disease of the eye-balls; an error of refraction; disease of the nasal mucous membrane; a scar on the surface of the brain, resulting from an injury; severe renal or biliary colic; and in

childhood, intestinal parasites, constipation, teething, a tight prepuce, or any other chronic peripheral irritation, or debility.

Convulsions sometimes result from *cardio-vascular disorders*. Cerebral anæmia (*e.g.*, in severe hæmorrhage) or cerebral congestion may cause convulsions—the same may be said about cardiac weakness, whether of old age or of congenital origin.

To recapitulate: the conditions under which convulsions occur are the same conditions that bring about an irritation of the motor neurones, of the cerebral cortex, the Pons, the Medulla, or of the spinal cord:—

- A. Functional conditions.
- B. Organic brain lesions.
- C. Toxic conditions.
- D. Reflex irritative conditions.
- E. Cardio-vascular disorders.

In order to come to a conclusion regarding the causes at work in a given case of convulsions, we have to institute an enquiry under the following heads:—

- (1) The age of the patient.
- (2) The character of the attack.
- (3) The state immediately preceding and following it.
- (4) The attendant conditions.

The object of such an investigation will be plain when we consider these points in a little detail:—

(1) *Age*. Under 12 months, the common causes for convulsions (Infantile) are—Toxæmias, acute (fevers) and chronic (rickets); reflex causes (*vide supra*); gross cerebral lesions (injuries at birth and others already mentioned); cerebral hæmorrhage.

Above 20 years of age is the commonest time for idiopathic epilepsy to commence. Over 30 years, syphilis may be suspected.

In patients over fifty, uræmia and apoplexy are the common causes of convulsions that come on for the first time. As regards the female sex, hysterical convulsions may be encountered between 15—25 years, and at the climacteric.

(2) *The character of the attack*:—

Convulsions may be limited to one or two limbs, or a set of muscles (referrable to a small area only in the motor cerebral cortex); or, they may start in the above manner, during each fit, and become generalised. Localised convulsions of this kind are designated Jacksonian epileptic seizures. It is important to enquire if the patient was conscious or not

during the fit. Idiopathic epilepsy is *always* attended with loss of consciousness; and the same symptom may be present in uræmia and hæmorrhage, and even in cerebral syphilis. The loss of consciousness may be only partial in hysteria and Jacksonian epilepsy (limited cortical lesion).

3. *The state immediately preceding and following the seizures:—*

The "aura" are characteristic of Epilepsy Major. Hysterical fits are not preceded by any "auræ."

4. *The attendant conditions:—*

A more careful investigation of the symptoms present (especially those connected with the cranial motor nerves, *e. g.*, the facial and the ocular) has to be made before the diagnosis can be said to be established.

*The Diagnosis of Cases of Convulsions:—*As convulsions are a symptom common to a variety of diseases, we shall now consider how the several causes may be differentiated from one another. The most common cause of convulsions (apart from those occurring in the final stages of severe acute toxæmias) is idiopathic epilepsy. Next to that, probably, comes hysterical convulsions, that form about 18 p. c. of all cases of convulsions. The toxic causes, perhaps, stand next in rank, although it looks possible that even the so-called functional convulsions (of epilepsy and hysteria) have their origin in some form of slow toxæmia. The organic causes take a smaller place in the production of convulsions. Infantile convulsions stand by themselves as a separate class.

We shall take these causes one after another, and differentiate the more frequent of them from the less. Strictly speaking, the most common cause of convulsions (but unfortunately the cause that is little amenable to treatment) is the one that terminates life after a last effort of the motor neurones to revive themselves—by this I mean the convulsive fits that mark the terminal scene of expiring life, brought on by an uncontrolled hæmorrhage or an overwhelming toxæmia, etc.

Even in these cases, hope should not entirely be lost until we have examined the pulse and the heart—because, if it turns out to be a case of internal hæmorrhage, it may not altogether be impossible to resuscitate the patient by a saline infusion and stimulation of the heart, combined with an attempt to control the leakage from the circulatory organs. We should, therefore, in the first place, exclude internal hæmorrhage as a cause of the convulsions, seeing that that is the condition that demands the most energetic, almost instant, treatment. Now, how can "internal hæmorrhage" be excluded?

An examination of the pulse and the heart may direct us to the possibility of hæmorrhage, taken together with a history of sudden onset, and pallor and any local signs of hæmorrhage (visceral or cerebral). The pulse of serious visceral hæmorrhage (*e. g.*, ectopic gestation ruptured) is rapid, thready, and quick and easily compressible; and the heart shows corresponding signs. In cerebral hæmorrhage, the pulse tension is usually high, and the heart action vigorous, and there may be arterial degeneration noticeable, together with other signs as we shall see later. Having thus excluded internal hæmorrhage as a possibility, we may proceed to think of epilepsy. General convulsive fits, preceded by "aura," coming on all of a sudden, marching definitely through tonic succeeded by clonic spasms, with complete loss of consciousness, dilated and irresponsive pupils, terminating in stupor and drowsiness, after a duration of only a few minutes—make an unmistakable picture of Epilepsy (Major). The tongue may be bitten; and the fæces and urine may be voided (the sphincters are relaxed). The attacks begin before the 20th year (cerebral syphilitic convulsions come on usually after 30 years); and a history of previous attacks is conclusive. Contrasted with this are hysterical convulsions, in which there is no definite "aura" (frequently there is the "globus" and epigastric sinking); the spasms are irregular and the tonic spasms prolonged and often recurrent (alternating with the clonic); the patient is rarely completely unconscious—(screaming and talking, which never occurs in epilepsy)—the pupils show the light reflex, and the conjunctival reflex is retained (it is lost in epilepsy), the tongue is never bitten, and the fæces and urine never voided (the sphincters never relaxed), and the fits may terminate in crying, etc., after a longer duration than in epilepsy. The movements of hysteria, moreover, assume a purposive character, and are calculated to hurt the patient's *friends* rather than the patients themselves! The age and sex of the patient will afford further proof in support of hysteria. Pressure over the ovaries (and other "hysterogenic spots") may start or cut short an attack of the spasms.

*Epilepsy v. Cerebral Hæmorrhage:—*The history of previous attacks, the aura, the convulsions preceding the coma, and the absence of rigidity of muscles or paralysis, may differentiate epilepsy from some forms of hæmorrhage in the brain. A patient about middle age who is the usual sufferer from hæmorrhage, rarely gets a first attack of epilepsy of the idiopathic type. If convulsions were present, with contracted pupils, pontine hæmorrhage may be suspected even in cases without rigidity or paralytic signs. In other cases, we may have to suspend our diagnosis until we have seen whether paralysis (hemiplegic) occurred or

not. Whenever it looks difficult for us to make up our minds if cerebral hæmorrhage or toxins are the cause of the convulsions, we should examine the head for any injury, the limbs for relaxation or rigidity or loss of reflexes, the state of the pupils, and the condition of the urine as regards the presence of albumin or sugar. The temperature should also be taken, and the odour of the breath noted (alcohol, acetone, etc.)

Uræmic convulsions may simulate epilepsy, but may usually be distinguished from it by the preceding headache and restlessness, the absence of the initial cry (of epilepsy), the recurrence of the fits, the lessened quantity of the urine and the urinary solids, the subsequent uræmic blindness (sudden and temporary), the age of the patient (the first fit in a person over fifty years of age).

Eclamptic convulsions occur in connection with pregnancy, and is associated with albuminuria.

Convulsions arising in chronic alcoholics and diabetics have the marked characters, which, with the previous history and an examination of the urine (acetone, sugar etc.) clears up the diagnosis.

Drug convulsions may also be mentioned. Strychnine poisoning produces intermittent convulsions; the jaw-muscles are involved late, and there is alternating relaxation and tonic contraction of the muscles. In tetanus, the jaw is affected early, and there is no relaxation whatever. Some forms of hysterical convulsions may be mistaken for strychnia poisoning; but in the latter the mind is clear till the last. Convulsions starting invariably in a definite set of muscles and becoming generalised (or remaining limited) should make us suspect Jacksonian Epilepsy—due to tumour, scar tissue and other causes.

In meningitis, in adults and in infants, convulsions may form a symptom. In the acute cases, some source of suppuration (*e. g.*, Otitis Media) may be evident; the invasion is sudden, the temperature may be pyæmic; there are, severe headache, retraction of the head, rigidity of the neck muscles, diffuse hypersensitiveness, and pain, and perhaps vomiting. Kernig's sign (extension of the flexed leg, with the thigh already flexed on the abdomen gives sudden resistant contraction of the hamstrings) may be elicited if there is spinal meningitis as well. Lumbar puncture would aid in the diagnosis. The abdomen may be retracted.

Paralysis may come on later.

Tubercular meningitis shows similar symptoms; but the onset is not sudden, and the course is prolonged (one or more months). And

there are usually signs of affection of the cranial nerves, such as, optic neuritis, squint, facial paresis.

When vomiting is present in a child, without diarrhoea, and especially with signs of irritability, some head mischief should be suspected.

In very young children, meningitis shows full fontanelles; if the convulsions are due to debility, the fontanelle is depressed. A rapidly growing tumour may simulate meningitis; but here, the optic neuritis will decide the matter.

When confronted with a case of convulsions, the irritation of the motor neurones is the first step to be thought of in investigating the case. With this in our minds, we next look for any organic cause (chiefly hæmorrhage and inflammation of the meninges) as the underlying factor. If hæmorrhage and meningitis can be excluded, look next for any toxic cause, among which uræmia is the chief in adults.

In children, the developing cerebral cells are excited by any of the toxins (*e. g.*, of indigestion) that the fully grown adult brain can resist. One of the infectious fevers (including pneumonia) is to be suspected in infants when we have excluded the possibility of hæmorrhage and meningitis, and the commoner reflex sources already dwelt upon. When in doubt about an inflammatory cerebral origin of the convulsions, an estimation of the leucocytes may be resorted to in addition to the diagnostic lumbar puncture.

Finally, the functional causes can be thought of if not already set aside from a consideration of the symptoms presented.

The Treatment of Convulsions.—As every convulsive paroxysm means a tremendous discharge of accumulated nervous vital energy from the motor elements of the cortex around which the storm has been raging, no effort should be spared on our part to adopt instant measures to quieten the nerve cells before they are damaged by exhaustion or injury. In other words, we should cut short the paroxysms whenever they occur, and diminish their frequency. After that, we turn to deal with the cause that has led to this upheaval.

To cut the paroxysms short, the most dependable therapeutic agent is chloroform, administered in just sufficient dosage to break off the fits and no more. While this is being done, wash out the rectum with saline, and inject into it a small quantity of water (say, one ounce for a child one year old) containing in solution a large enough dose of chloral and bromide of potassium combined (for a child of one year, chloral *gr. v.*

with Pot. Bromide gr. x.) Or, the chloral and bromide (in smaller doses) may be administered per mouth.

The use of these sedatives must not be postponed, as their action is practically not attended by toxic effects as in the case of chloroform (which will be required if other sedatives are not administered in time). Having thus staved off the immediate danger, we look about for the cause of the fits—organic, toxic, reflex, functional, etc.—and treat these accordingly. The organic cases are treated as occasion demands, —surgically, or medically (palliative), by means of sedatives. In the toxic variety, besides administering sedatives, we should aim at eliminating the toxins in the blood by means of smart purgatives, diaphoretics, or even by bleeding the patient. Among the purgatives may be mentioned calomel, jalap, and croton oil. A grain or two of calomel may be given to a child suffering from convulsions. Diaphoresis is obtained by the hot blanket pack, or the warm bath in the case of infants (immersion of the body of the infant in water about 100°F., for two or three minutes, also relieves the cerebral congestion which can itself bring on or aggravate the fits.) Bromocarpin (Syrup. Pilocarpinet Potassii Bromidi, dose $\frac{3}{4}$ -1 daily) has been highly recommended. Bleeding (10-20 ounces of blood, when pulse is full and tension high and the heart dilating) will give instant relief in properly selected cases. With or without venesection, the introduction of normal saline into a vein or under the skin, is also an approved method of eliminating the toxins after dilution.

In uræmic cases, dry cupping may be applied to the loins, the lumbar puncture be performed and Urethane (30 gr. doses) given every few hours. The Thyroid Extract has met with some success in eclamptic attacks.

In the convulsions of debility in marasmic infants, stimulants (not sedatives) are necessary.

The preparations of opium had better be used with great caution. Other sedatives commonly used are:—

Bromalin (gr. 5-30.), Camphor Monobromate (gr. 2-10., in pill or cachet), Musk, Sodium Nitrite, Asafoetida.

Our Contemporaries.

MEDICINE.

The Diagnosis of Incipient Pulmonary Tuberculosis.

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Of the problems which confront the physician to-day none is more important and interesting than the diagnosis of incipient pulmonary tuberculosis. The chances for recovery of a tuberculous patient are in most instances, if not in all, in direct ratio to the earliness of discovery of his disease; this fact alone should be a sufficient argument in favour of the employment of every means toward the detection of the affection in its earliest form. The importance, again, of diagnosis in the first stages of infection cannot be overrated from the point of view of social economy; it is costing the Municipality and the State thousands of dollars yearly to care for subjects in the advanced stages of the disease, who, had their affection been diagnosticated in its incipency, might be supporting themselves.

A discussion of the economic aspect of the question is outside the scope of this paper, but a consideration of the number of tuberculosis patients in our hospitals and other institutions, whose support is derived wholly or in part from the public funds or from private charity is appalling; likewise the number of families which, because their older members are unable to exercise their earning power on account of tuberculous disease, receive aid from the community, is no small one.

For the early diagnosis of pulmonary tuberculosis no unusual training is required; it is wholly within the attainment of the general practitioner who will use his powers to their full. And it is fortunate that this is so, for most of the patients to whom this diagnosis is pregnant with importance apply, first, at least, to the class of physician who has come to be termed the "family doctor." There are, now and then, naturally enough, cases which present unusual difficulties, but these are few among many. In the diagnosis of incipient pulmonary tuberculosis, as in that of any other disease, best results will follow a certain routine procedure. Each step in this procedure is of importance, and particularly do I wish to emphasize this fact, for the diagnosis of tuberculosis in its early incipency often cannot be assured until the results of these steps are reviewed and summed up.

1. *The History of the Patient*.—This should be taken in full and with care; no detail of importance should be neglected. Heredity, to my mind, plays a much less important rôle in the causation of the disease than the fact that the patient may have had intimate association with tuberculous individuals. Such association may have taken place at home or elsewhere, the work-room, for instances. Trades of themselves seem to have no special etiological significance, but in the nature of things the affection is much more likely to attack those who work in crowded, ill-ventilated, and unsanitary quarters than those who are employed under the opposite conditions or in the open air.

The previous history of the patient with regard to former illness may teem with helpful facts; for instance, histories of influenza, pleurisy, pneumonia, and even of digestive troubles are often strongly suggestive of tuberculous lung disease. Surgical conditions such as hip and spinal disease, cervical adenitis and anal fistula point distinctly toward tuberculous infection.

In eliciting the history of the patient's present illness the polymorphous character of the symptoms cited should not in any way be allowed to allay the suspicion of tuberculosis if there is the least reason for such; in fact by far the safest stand for the physician to take is to judge the patient guilty of tuberculous infection until, by every means at the examiner's command, he has been proven innocent of the disease.

MILLER gives the following as the more usual initial symptoms: (1) Catarrhal or influenzal manifestations in which the cough is the chief symptom. (2) Symptoms suggestive of malaria in which general malaise, loss of appetite, slight evening rise of temperature, and mild digestive disturbances appear gradually, with or without cough. (3) Hæmoptysis. This should always be held to be of tuberculous origin unless other distinct cause can be shown. (4) Gastric disturbances which obscure other symptoms of more definite character. (5) Anæmia, without apparent cause. This symptom should not be allowed to deceive the diagnostitian in young girls in whom chlorosis is so frequent. (6) Pleurisy with effusion. This should always be considered tuberculous until the contrary is proven. (7) Pain in the chest. This is a not infrequent initial symptom. It is usually dull and aching in character and often is referred to the shoulder-blade. MILLER holds that the combination of any two of these symptoms or trains of symptoms should, as a rule, be sufficient evidence to establish a tentative diagnosis. Even where definite physical signs are lacking

suspicion should be kept alive and the physician should be stimulated to further careful observation of the patient and to regular and frequently repeated physical examinations. In such cases the time will often come when physical signs of certain diagnostic import will be detected.

2. *Physical Examination of the Chest*.—As a preliminary, and a most essential one, the patient should be stripped to the waist and seated in a light room of which the temperature is sufficiently high for comfort; he should be taught how to breathe and to cough so that the auscultatory signs may be elicited to the best advantage. The inspection of the chest in incipient cases often offers no evidence of value. The main points on which observation should be centred are: (a) the shape of the chest; (b) its symmetry; (c) its movement. One should notice whether both sides of the thorax expand synchronously, whether apices and bases show a correspondingly well-marked expansion, and whether there is abnormality of the general conformation of the chest. The supra and infraclavicular regions are often little retracted until the disease is well advanced. A low chest expansion is of little diagnostic value.

Palpation may reveal changes in vocal fremitus; localized increased fremitus may indicate beginning infiltration or consolidation.

Percussion.—Slight deviations from normal pulmonary resonance may be demonstrated, particularly at the apices, but they are often of such ill-defined character as to be of little diagnostic worth when not strengthened by other evidence.

Auscultation is the means which is to be relied on as giving the most valuable diagnostic testimony. MILLER states that cases in which one can, with certainty, demonstrate a lesion in the absence of abnormal auscultatory signs are very few. He considers the use of the stethoscope preferable to that of the unaided ear, for with it sounds unappreciable to the latter become plain; rales are more easily heard, and the instrument is better fitted for application to the various regions of the chest. The ear, of course, may be employed alone and aided by the stethoscope. At times the former is more acute in the detection of changes in the breath sounds. The portions of the chest over which abnormal physical signs are more likely to be demonstrated in early infections are: the supraclavicular fossæ; the first intercostal spaces, particularly at their inner and outer extremities; the region between the scapulæ just below the fourth dorsal vertebræ; along the vertebral border of the scapula when the arm is thrown around and in front of the neck with the hand

on the opposite shoulder, this area being over the interlobular septum; an area internal to the angle of the scapula; and, in children, the fifth and sixth spaces just external to the nipple. MILLER suggests, as an aid to accurate auscultation, the use of a short, sharp cough alternating with a quickly-expelled, short, quick inspiration; this should be employed previously to any deep respiration for the measurement of expansion in order that rales of evanescent character may not fail of detection.

By this method of auscultation the following observations may be made: (1) the character of the breath sounds; (2) the presence of rales and their character; (3) the cough sound. The cough should never be omitted for, in itself, it has a character peculiarly its own; this may show the same variations as the breath sounds, and in addition it is essential for the appreciation of fine rales, which may not be audible at any other time. Also, by its use we may be able to detect minute interruptions in continuity which are not true rales, but are analogous to the change in breath sounds described as granular or rude breathing. The presence of this alteration in the respiratory sound indicates an early stage of the condition which later is evidenced by the presence of true rales. Changes in voice sounds may be demonstrated by auscultation. Alteration of the whispered voice tending toward the broncho-vesicular quality is evidence of slight consolidation; this change is appreciated more accurately by this sign than by either the true voice or the breath sounds.

The toxæmia due to tuberculous infection is evidenced by an extremely important (from a diagnostic standpoint) train of symptoms, the most common of which are slight evening rise of temperature, rapidity of pulse, loss of weight, undue feeling of fatigue, increased rate of respiration, and anæmia. These symptoms are of most value to the diagnostician when they are observed for a week or more under different conditions, at different hours of the day, and especially before and after exercise. An important early diagnostic sign is a varying pulse rate and temperature. The latter may not rise greatly above the normal, but its daily range is likely to be abnormally large. These symptoms and signs of toxæmia, when taken in connection with a history pointing toward tuberculous infection, are of extreme diagnostic value even when unassociated with lung changes sufficiently marked to be demonstrable by physical examination.

Sputum Examination.—In incipient pulmonary infections sputum examination is very likely to yield little diagnostic assistance; still

it is important that frequent specimens should be examined and, while a positive result assures the diagnosis, repeated negative ones are by no means conclusive. Bacilli are said to be absent from the sputum in quite 65 per cent. of all incipient cases. Recently PATERSON has advocated treating the sputum with antiformin, which is a liquid composed of equal parts of liquor sodæ chlorinatæ and 15 per cent. solution of caustic soda, in the following manner: 10 c.c. of sputum are mixed with 2.5 c.c. of antiformin. The mixture is allowed to stand for twenty-four hours, when it is shaken and centrifugalized. The supernatant fluid is then drawn off and replaced with normal sodium chloride solution; this mixture is shaken and centrifugalized and the process is repeated. The sediment is then smeared and stained in the usual manner. He believes this process is a considerable aid in finding bacilli in specimens where they are few in number.

HAUSMANN, noting that many of his gastric cases gave evidence of beginning lesions at the apices, has examined the contents of their fast-ing stomachs (provided no sputum was obtainable) and in six cases within two months was able to demonstrate the presence of tubercle bacilli. This suggestion would appear worthy of further study, especially in connection with the use of antiformin, and should be particularly applicable in children from whom it is often quite impossible to get specimens of sputum.

The inoculation of guinea pigs with sputum in which bacilli are not demonstrable is of value as a diagnostic help but is rather beyond the resources of the practitioner.

The stools are said to contain the bacillus, even in beginning tuberculosis, and examinations of them may reveal its presence.

Blood examination.—The statement made by ROSENBERGER that the blood of incipient cases often contains demonstrable tubercle bacilli is uncorroborated; in fact it is now believed that his results were due to the fact that his wash water was contaminated with an acid-fast bacillus morphologically similar to the tubercle bacillus.

Cytologic Diagnosis.—WIDAL believes that a preponderance of lymphocytes in the blood speaks for tuberculous infection while a majority of polynuclear leucocytes of neutrophile and eosinophile types excludes the disease, but this theory fails of general acceptance outside of France. The employment of ARNEST's method of differentiation of the nuclei of the leucocytes is being found to be of some value in diagnosis, but no definite work along this line has as yet been published.

The Opsonic Index.—KING states that certain observations and experiments conducted by him and INMAN seem to show that opsonic index determinations may have a practical use in the diagnosis of early tuberculosis. Their complicated technique and the special knowledge necessary for their performance would seem to militate greatly against their general use. For diagnosis the relation of the temperature to the opsonic index before and after periods of exercise is observed. In tuberculous patients the temperature rises after exercise, while the opsonic index is lowered. JACOBS finds that the opsonic index rises in pulmonary tuberculosis after a period of deep breathing lasting for about a half hour. He considers that this exercise produces an autoinoculation which results in a corresponding rise in the opsonic index and regards this method of great value in early diagnosis, since by it the presence of infection can be demonstrated long before bacilli can be found in the sputum.

Agglutination Tests.—These, according to VON RUCK, may be relied on, either in connection with tuberculin tests or alone, to confirm the diagnosis in most nonbacillary cases where the physical signs are suspicious. Of 300 cases tested, he found the reaction negative in 20, and in the rest positive in dilutions of from 1 to 5 to 1 to 50. ARLOING and COURMONT have stated that agglutination in dilutions below 1 to 5 should not be considered diagnostic, but VON RUCK believes that in the absence of other definite diagnostic evidence no reliance should be placed on a dilution less than 1 to 10. When subjective symptoms and physical signs point toward infection, he is accustomed to consider a reaction in higher dilution of positive value, and that the tuberculin reactions may be dispensed with, since their results have always confirmed the serum tests in his experience.

The Tuberculin Tests.—Of these there are four, three of which have been introduced comparatively recently.

1. *The Percutaneous Test.*—This consists in the inunction of an ointment of equal parts of old tuberculin and lanolin. The site of the inunction is usually a small area of the skin over the abdomen. A positive reaction is evidenced by the appearance of a popular eruption. BANDELIER and ROEPKE believe that this test is inferior in its certainty to the cutaneous test, which is uninfluenced by the thickness and dryness of the skin, the number of its pores and various constitutional conditions, factors which materially affect the percutaneous test. The field of the latter is in infants in the first half year of life, and in these a positive reaction points strongly toward the probability of an active tuberculous infection.

2. *The Conjunctival Test.*—This consists in the instillation into the eye of a drop of a $\frac{1}{4}$ to 1 per cent. solution of old tuberculin in normal NaCl. A positive reaction is evidenced by a varying degree of congestion of the caruncle and conjunctiva which appears in from three to forty-eight hours. This test is a reliable test for patent bacillary tuberculosis, and as such it is superfluous. It does not show whether the process is active or inactive. A negative reaction does not prove the absence of active tuberculosis, and positive reactions may appear in healed tuberculosis, in the clinically nontuberculous, and in the healthy. As a rule, the test does not react positively in those immune to tuberculosis or in the cachexias of tuberculosis and other conditions. The disadvantages of the conjunctival test are that it cannot be employed if there is any inflammatory condition present in the eye, and that it may cause untoward results. Both it and the percutaneous test are at present generally discarded.

3. *The Cutaneous Test.*—This consists in the inoculation of a small scarified area of the skin, preferably upon the arm, with a drop or two of a 10 to 25 per cent. solution of crude tuberculin in salt solution (or 5 per cent. carbolic-glycerine, 1 part; normal sodium chloride, 2 parts). A positive reaction is evidenced by the appearance in from twenty-four to forty-eight hours of a zone of light pinkish redness about one-half inch wide and accompanied by swelling; finally a papulæ forms, which disappears in from seven to eight days, leaving behind some temporary discoloration of the skin. The advantages of this test are that it is simple, harmless, applicable to febrile and bed patients, and causes no local or constitutional disturbance. A positive result does not point out the site of the lesion, nor show whether the process is active or inactive. It may appear in the clinically nontuberculous, and indicates that the body at some time and in some manner has been infected with the tubercle bacillus. Cases in which positive reactions occur, and in which no lesion is demonstrable, may be accounted for on the ground that the lesion, being insignificant, has been overlooked. A negative reaction points strongly toward freedom from tuberculous disease; but, on the other hand, the reaction may remain negative in the presence of actually existent and clinically demonstrable tuberculosis. Negative results may occur also in certain constitutional conditions, such as general cachexia, and in idiosyncrasy of the skin or the exanthemata. The positive result is of specifically tuberculous nature and its occurrence points toward pathologically existent tuberculosis.

The great field of usefulness of this test is in children, and in them a positive reaction is an evidence strongly in favour of the existence of tuberculosis. In adults a definite and promptly appearing reaction is moderately good testimony in favor of recent and active infection. Mild, delayed and atypical reactions are valueless in diagnosis since healed foci which have never given definite signs or symptoms may be evidenced by positive reaction. The negative value of the test is impaired to but slight degree by the exceptional cases of tuberculosis which fail to react for the reasons given above.

Baldwin considers the cutaneous test to be the one most suitable for general use, and that it is absolutely harmless. No other test is required for children, because in them a positive reaction is more significant of recent infection and does not often occur in apparent health under the age of 12. Other tests may be necessary in adults to confirm the result of a cutaneous test, but this latter can be advantageously employed as a preliminary in all cases.

4. *The Injection or Subcutaneous Test.*—This is the last resource and the most searching method of tuberculin diagnosis, and for this reason it is often regarded as the only satisfactory test, in spite of the unpleasant fever reaction. Baldwin regards it as unnecessary in most cases at present, but in instances where a focal reaction is desired, for instance, where a negative cutaneous test requires confirmation, it is of great value. Since the focal reaction in the lung escapes notice in most suspects, the subcutaneous test is of doubtful value in confirming the positive cutaneous reaction.

The most satisfactory tuberculin to employ is Koch's original product, but other filtered extracts may be used. Preparations containing dead bacilli should be avoided; the same is true of emulsions or vaccines, owing to their uncertain and irregular absorption.

Klebs advises the following technique: The site of the injection, which may be under the angle of the scapula or other suitable point, is sterilized, as is also the needle to be used, and the solution of Koch's old tuberculin, diluted with 0.5 to 0.25 per cent. carbolic acid in distilled water, is injected deeply into the tissues. The initial dose differs—Brown advises 0.5 mg., to be followed, if no reaction takes place, successively by 1, 3, 5 and 8 mg. Roepke employs 0.2, 2 and 5 mg. The dose in children must be smaller by 1-10 to $\frac{1}{2}$ than in adults. The reaction appears in 6 to 8 hours as a rule, hence 8 to 10 A.M. is perhaps the best time for the injection.

A positive reaction consists of four phases: (1) The local inflammatory reaction at the point of injection; (2) the rise of temperature; (3) the constitutional disturbance, headache, malaise, prostration, nausea, etc.; (4) the inflammatory reaction in the tuberculous focus. These may appear simultaneously, separately, or two or more in combination, and differ in their diagnostic value; by some the pyrexia and constitutional symptoms are considered most significant, while others hold that the focal reaction is more pregnant with meaning. If one dose produces a mild, indefinite reaction, the same amount may be given after two to three days, but the dose should not be increased; Koch regards a strong reaction following a repeated dose as especially characteristic and an almost infallible sign of tuberculosis. The interpretation of results must take into account the amount of tuberculin required to produce the reaction, the promptness with which it develops, and the extent of the local and constitutional sequelæ.

In applying this test, care should be taken that the tuberculin solution should be freshly made and accurately measured.

The contra-indications are as follows: (1) A febrile temperature; the temperature should not have risen above 99.5° F. in the month for at least three days before the test. (2) The test should not be employed when satisfactory diagnosis can be made without it. (3) Rapid pulse. (4) History of recent hæmoptysis. (5) Organic heart disease. (6) Kidney disease. (7) Epilepsy. (8) Addison's disease. The test is inadvisable in hysteria, convalescence from any severe illness, apoplectic habit, marked arterio sclerosis, diabetes and amyloid degeneration of the viscera.

The subcutaneous test is the diagnostic test of final resort and is the most certain of the tuberculin tests. Like that of the other tests, its clinical value is usually in direct proportion to the smallness of the dose and the degree of the response. The more recent the infection and the more extensive the disease, the more delicate is the reaction unless the disease is rapidly progressing or grave constitutional weakness is present. In general it may be stated that the tuberculin tests are very valuable when taken in connection with the patient's history, his physical signs, and his constitutional symptoms.

X-Ray Diagnosis.—Klebs considers the fluoroscope of little use as an aid in diagnosis in most instances; at times it will show a contracted, shaded apex, when dullness and marked changes in breathing cannot be discovered, but this is the exception rather than the rule. Limitation of motion at the base is more commonly to be detected and is more valu-

able as a diagnostic sign, but too much importance should not be placed upon it. The fluoroscope is of very material aid in the early diagnosis of bronchial gland enlargement, and consequently has a distinct field of usefulness in suspected cases in children.

Rist believes that an increased shadow at an apex may be due to active or old disease or both. When there are symptoms and signs of infection at an apex without an increased shadow on the plate he suspects a fresh involvement in its early stage. A diminished shadow at an apex with no physical signs may indicate active commencing tuberculosis. Radioscopy excels physical examination in its ability to show the extent of pulmonary disease. Beginning central foci are not demonstrable by physical examination, but the X-ray may detect them.

Wolff holds that the X-ray, in connection with the tuberculin test, enables us to locate the lesion when the latter has proven its existence, the ray being of special value where physical signs are equivocal and the symptoms are suspicious.

Krause finds that in early tuberculosis in adults the fluoroscope will detect apical infiltrations which are recognizable on percussion. The X-ray examination is likely to show that the lesion is more extensive than percussion would lead one to suspect. Infiltrations either not demonstrable by percussion or only indefinitely so can often be detected by the fluoroscope, and, when doubtful, confirmed by X-ray photographs. Neither the fluoroscope nor the X-ray photograph will detect early catarrhal processes, but when these are of long standing the apices may show darkly owing to their poor aeration. These shadows do not clear up on inspiration. Diaphragm pictures may demonstrate the presence of incipient infiltrations which would not be shown by other methods. Calcification of the first rib can be detected, and, according to Freund, is an aid in early diagnosis. The clearing of the apices on inspiration which is present in health is often absent in early tuberculosis. The alterations in movement of the diaphragm are of no diagnostic value.

In incipient infections in children and young people apical findings are lacking, hence detection of shadow changes, at the hilum of the lung, such as enlarged, indurated, infiltrated, calcified, or caseous bronchial glands or similar processes in their neighbourhood, are the more important. Such findings are of extreme value in early diagnosis, but we must depend on the clinical findings to learn whether these processes are active or no.

The great drawback of the X-ray examination in pulmonary affections is the fact that considerable skill is necessary to the proper interpretation of the findings.

Summary.—When it comes to the making of a diagnosis in a case of suspected incipient pulmonary tuberculosis the following factors seem to me to be the most important and the ones on which chiefest dependence is to be placed:

1. The anamnesis. A history of association with other cases of tuberculosis and of previous illnesses such as would point to pulmonary infection is very suggestive.
2. Proper, thorough, and, if necessary, frequently repeated physical examination.
3. Careful observation of the symptoms of toxæmia.
4. The cutaneous tuberculin test.
5. X-ray examination.
6. As a final recourse, a diagnostic injection of tuberculin.

I have omitted sputum examination from this list because positive results are so infrequent in beginning infections, and because negative results are absolutely inconclusive.—*The Canadian Practitioner and Review.*

Prevention of Malaria.

The following summary regarding malaria and its prevention is taken from a report on malaria investigations in the island of Mauritius by Prof. Ronald Ross, of the University of Liverpool:

Facts regarding malarial fever.—In the light of modern knowledge it may be safely affirmed that malaria will not remain in a locality (1) unless the carrying agents (*Anophelines*) are numerous enough, (2) unless there is a sufficient number of infected persons to infect the carriers, and (3) if the insects are prevented from biting human beings.

Three groups of preventive measures may therefore be employed to reduce the disease, namely: (1) Anopheline reduction, (2) case reduction, (3) isolation.

The precise details of the first method were first laid down in 1899 and have since been put into practice with great success in both the Suez and Panama canal zones.

The second great antimalarial measure, that of case reduction, was originated in 1900 by Koch and Celli, who, feeling doubt as to the possibility of mosquito reduction, urged that the best way of dealing with malaria would be to leave the mosquitoes alone and to cure the human patients from whom the insects become infected. Thus, though mosquitoes would continue to abound, they would find no parasites to carry. By the use of this method Stephansort, in New Guinea, was cleared of malaria by Koch in a few months.

The third measure, isolation or protection from bites of mosquitoes, has been unconsciously in use for a long time; the ancient Romans being already familiar with mosquito nets, while in America wire gauze screens for windows and verandas have long been employed.

Relative value of these measures.—It is obvious that any of the above measures, if completely carried out, must result in the complete suppression of endemic malaria in any locality. On comparing them, however, the first consideration which must strike the practical sanitarian is the following: Isolation and case reduction require ready compliance on the part of the public; mosquito reduction does not. To use culicifuges and mosquito nets, to screen windows and verandas, to take quinine day after day, to force one's children to take it, and to submit to constant inspections require an endless amount of trouble on the part of the people, equal trouble on the part of the authorities, expense and perhaps friction with the community. On the other hand, no one objects to the drainage of swamps and clearing of water courses which can be done by the authorities without troubling any one.

Next, case reduction guards against malaria only, but isolation and mosquito reduction protect against all mosquito-borne diseases.

Again, isolation gives only partial and temporary respite from mosquitoes; mosquito reduction, where thoroughly carried out, a much greater security.

Lastly, mosquito reduction has a general sanitary advantage which is not conferred by the other measures. It practically compels the sanitary department to maintain a minute inspection of the area in its charge and becomes therefore a sort of general insurance policy for good sanitation.

Theoretically, therefore, mosquito reduction has advantage in every way. Practically, however, the preference for any of those measures must be determined by local conditions, as questions of cost and feasibility have to be considered. The following general law has been enunciated

by Doctor Ross: The greater the density of population the greater the advantages of mosquito reduction. In rural areas mosquito reduction may not be nearly so advantageous. This measure is for the city, the town, and perhaps the village, not for the wilderness. For isolated houses, quinine, isolation, and treatment of small neighboring waters, if possible, are called for; larger works of drainage can be indulged in only by rich house-owners, not by the authorities. Also in small towns and villages situated in the midst of large marshy forests, or flat, water-logged country, the cost of mosquito reduction may be too great.

General preventive measures.—The measures likely to do most good for the expenditure of money and labour involved are the following: (1) Measuring the amount of malaria in the locality affected. (2) Treatment of children in schools, and a certain amount of free distribution of quinine. (3) House protection. (4) Mosquito reduction where advisable (a) by minor works and (b) by major works. (5) A suitable permanent organization and an annual malaria report.

(1) The ideal way to ascertain the amount of malaria in a locality would be to search for the parasites in the blood of every person in the place. But the parasites cannot often be found even when present; too much time is taken by such an examination, and hence to estimate correctly the proportion of infected people throughout a large population would be a great and practically impossible task. The blood examination should therefore be used only for small populations. For large ones there is, however, available a much easier though less rigid method, which consists in examining the people for enlargement of the spleen, so frequent in cases of malaria. This can be done literally in a few seconds for each person. In practice, also, the examinations are usually confined to children, say, under 16 years of age. This is done for several reasons. Children are easily accessible in schools, while men are generally out at work, and women often object to the examination. But the most important reason is that adults have in many cases become partially immune.

By taking a *periodical spleen census* of school children there can be determined: (1) The localities most affected by malaria. (2) The effect of the preventive measures. (3) The children who require treatment. For this purpose a register of all children of 15 years or under with enlarged spleens should be kept at each school. This register should contain the age, sex, and names of the parents of the children,

with columns for noting whether the enlargement is small, medium, or great, and a column for remarks. An examination of all the children attending school should be made every quarter by a medical officer, for the purpose of selecting those with enlarged spleen and making the proper entries in the register. Twice a year the figures and data in this register should be collected and forwarded to the health department.

(2) *Treatment of children and free distribution of quinine.*—The objects proposed are to improve the health of the individuals (especially children) and to prevent them from becoming a source of infection to others. Children are the principal homes of the parasites, and can be treated more methodically in school than elsewhere. At each quarterly inspection the medical officer should indicate the children with enlarged spleen, who should be given quinine, and the dose for each. This would be regularly given to the children by the teacher until discontinued by order of the medical officer. The dosage and mode of administration of quinine should be left largely in the hands of each practitioner. It seems, however, preferable to use small and frequently repeated doses rather than occasional large ones.

(3) *House protection.*—This is suggested chiefly as a prospective vicarious measure; its object being to exclude mosquitoes in localities where, owing to large marshes or much forest, they cannot easily be reduced. The aim to be attained would therefore be the design of a type of a house which will exclude mosquitoes, and could be adopted by the community, and failing in this a cheap method to protect the house by wire or muslin netting could be devised.

(4) *Mosquito reduction.*—The measure is advised, as a rule, only for densely populated areas. The works required may be divided into two classes, minor and major works. Minor works are those which can be continuously carried out without the special services of an engineer, such as the clearing of water channels and drains, release of surface pools, filling of holes, removal of house breeding waters, cutting of underwood, removal of grass, weeds, etc., from the margin of ponds and streams, etc. Major works are those which require to be designed by an engineer, such as the drainage of swamps, canalization of streams, etc.

(5) *Annual report.*—Here should be given the details of the work done during the year with cost and the results obtained, and also figures for previous years for comparison.—*The China Medical Journal.*

Latent Leukæmia.

By D. NÆGELI.

The diagnosis of leukæmia is usually easy. But a number of cases—especially the most acute—are never recognised, because there is no palpable enlargement of the spleen and lymphatic glands, and frequently but slight increase in the number of leucocytes. The following case is an example:—

A man, aged 40, had daily rises of temperature, frequently exceeding 102.2° , followed by profuse sweating. There were progressive emaciation and the cachexia and the diazoreaction was present. There was pronounced neutrophile leucocytosis—about 20,000—so that an infection or suppuration was suspected, but repeated investigation revealed nothing to account for the symptoms. Six months after the onset of fever a physician diagnosed hepatic abscess. Laparotomy was performed and the liver was found normal. But there was extensive enlargement of the retro-peritoneal lymphatic glands, which, in conjunction with the symptoms, caused malignant granuloma of the lymphatic glands (Virchow's lymphosarcoma), to be diagnosed. After the operation the patient's condition further deteriorated, and death appeared imminent. Malignant granuloma is undoubtedly an infective disease, though the specific organism is unknown. As Ehrlich's arsacetin (acetyl-atoxyl) has proved beneficial in various parasitic diseases, it was given in 0.05 gm. doses (about $\frac{1}{4}$ gr.) 4 times daily. In 2 days the temperature became permanently normal, and recovery rapidly followed. The man gained 30 lb. in $2\frac{1}{2}$ months and the leucocytosis disappeared. Four-and-a-half months after he became apyretic, the man felt better than he had ever done and had gained another 6 lb.

It has long been recognised that the symptoms of acute leukæmia may be those of the hæmorrhagic diathesis. There is usually high pyrexia. These cases are easily mistaken for examples of *morbus maculosus Werlhofii*; scurvy, or purpura fulminans. The difficulty of diagnosis is increased by the fact that in these cases especially, splenic and lymphatic enlargement is commonly absent and the leucocytes may be but little increased. Diagnosis is rendered possible by a differential blood count. Thus the majority of the leucocytes consist of pathological forms; the large lymphocytes predominate, or the small lymphocytes form as many as 90 per cent. or even more of the whole, or, lastly, in the acute myeloid form, numerous myelocytes and myeloblasts are present. Less generally known is the fact that in chronic lymphatic leukæmia with 20 to 30,000

leucocytes, 75 to 80 per cent. being lymphocytes, but with no enlargement of the spleen or lymphatic glands, local hæmorrhages, *e. g.*, from the kidneys owing to leukæmic infiltration of the renal pelvis, may be an early symptom.

In a second group of latent leukæmia the most striking symptom is gangrenous ulceration of the buccal cavity, with or without hæmorrhage in the skin and elsewhere. Gangrenous stomatitis, tonsillar ulcer, with or without gangrenous patches or diphtheritic membrane, are, unless a blood-count is made, almost certainly attributed to necrotic angina or severe septic diphtheria or diagnosed simply as gangrenous stomatitis without the cause being discovered. Splenic and general lymphatic enlargement may be absent, or like the swelling of the cervical glands, inconsiderable. Here, again, a diagnosis is possible only by a differential blood-count. The leucocytes are frequently not greatly increased in numbers but the varieties are abnormal.

In the third group of latent leukæmia the most marked symptoms are anæmia and cachexia, hæmorrhage usually occurring only shortly before death. Moderate splenic enlargement is not infrequent in these cases. The blood-count is usually typical of the lymphatic form of leukæmia, but may occasionally be that of the myeloid form. In the latter case abnormal forms of every variety of myelocytes, myeloblasts, numerous nucleated erythrocytes, and pathological mitoses erythroblasts indicate a profound disturbance both of leuco- and erythro-poiesis.

In the fourth group localized enlargement of the lymphatic glands, *e. g.*, the cervical or mediastinal, occurs, or there is splenic enlargement but no lymphatic. In some of these cases the blood-count at an early stage may be quite normal but later it becomes typically leukæmic. At first there may actually be leucopenia, and a diagnosis is impossible. The writer considers these to be examples of the transition of pseudo-leukæmia (lymphadenoma) into leukæmia.

Occasionally the only sign of leukæmia is tonsillar enlargement. If tonsillotomy is performed, dangerous hæmorrhage results. In the acute pyrexial stage of leukæmia typhoid fever or septicæmia have repeatedly been diagnosed. In 2 cases known to the writer with splenic enlargement the patients had been treated for gastric carcinoma, and in many others the presence of cachexia had roused the suspicion of tuberculosis. In 2 cases infarction of the spleen was mistaken for acute peritonitis.—*The Medical Review*.

Hydrogen Peroxide for Hyperchlorhydria.

REFERENCE has already been made in these columns to the treatment of dyspepsia with hyperacidity by the administration of hydrogen peroxide, when the idea was first suggested by Dr. Petri and successful results were also published by Dr. Goodman. Since then the treatment has been pursued by other Continental physicians, and further satisfactory reports are to hand. Dr. Girardi, of Turin, has tried the method in fourteen cases, and is persuaded of its efficacy. He gives 15 to 20 c.c. of hydrogen peroxide in 150 c.c. of water about half an hour after meals. Dr. Poly, of Wurtzburg, has similarly treated forty patients suffering from hyperchlorhydria without complications, such as gastric ulcer or gastritis. His method is, however, somewhat different. Every other day after a test meal he gives 300 c.c. of 0.5 per cent. solution of hydrogen peroxide and then examines the gastric contents, and according to the result determines whether the treatment should be continued. He finds that in the majority of cases three to five administrations of the hydrogen peroxide are sufficient to cause a disappearance of the trouble. In cases in which the hyperchlorhydria is more serious, amounting from 0.24 to 0.36 per cent. free hydrochloric acid, the dose must be repeated ten or more times, but he finds that it is just in such cases that the treatment is especially efficacious. So far as can be judged at present, the treatment appears to be permanent in its effects. Dr. Poly, examining some of his patients several weeks after treatment, found the gastric secretion still quite normal.—*The Hospital*.

Poisoning by Eucalyptus Oil.

OIL of eucalyptus and chloroform have a recognised value in the treatment of ankylostomiasis, but their use is at times attended with somewhat alarming phenomena, and several cases have been reported of late in which symptoms of poisoning occurred. G. G. Jolly, I.M.S., reports another example in the *Indian Medical Gazette*. The patient—a Hazara—was admitted to hospital for anæmia and dyspepsia. His blood showed a well-marked eosinophilia, and ova of ankylostomum duodenale in considerable numbers were subsequently found in the stools. An aperient of magnesium sulphate was given at night, and on the following morning a mixture containing oil of eucalyptus, 30 minims; chloroform, 45 minims; and castor oil, 10 drachms, one-half being given at 7 A.M., the second at 7.30 A.M. At 9.30 A.M. the patient complained of weakness and giddiness, and at 10 A.M. was in a state of profound collapse, great languor, giddiness, difficulty of respiration, pain

all over the body, and especially in the stomach, head, and urethra. Respiration was shallow and laboured, pulse weak, irregular and of low pressure, pupils rather dilated, and the conjunctival reflex diminished. A mustard plaster was applied over the heart and a hypodermic injection of strychnine administered. At 11 A.M. the patient was no better, and the extremities were cold. Atropine sulphate $\frac{1}{20}$ gr. was given subcutaneously, and hot bottles applied to the feet. Shortly afterwards he passed a copious motion. An enema was given, which was followed by two other motions. The patient rapidly got better and soon recovered.—*The Hospital.*

The Plague Advisory Committee's Interim Report.

THE extraordinary method adopted of publishing the report of the Advisory Committee on plague which was appointed by the Secretary of State, the Royal Society and the Lister Institute, has necessarily deprived it of some of its value. Few persons see it and the report comes out in intermittent instalments as extra numbers of the *Journal of Hygiene*. Such an extra has just appeared, dated November 1910. It forms part of volume X of that excellent and high class journal and is continued from p. 308 of vol. viii.

The present issue consists of seven papers or contributions, as follows:—Plague epidemics in animals; plague in rats; plague in scattered villages; plague in Belgaum; plague in Poona; vaccination of animals against plague; and an *interim* report by the Advisory Committee.

We quote *in extenso* the following:—

“The following statement embodies the chief conclusions which have been provisionally reached by the Advisory Committee as the result of the investigations made under their direction from 1905-1909 into the mode of spread of plague in India.

(1) Considerable epidemics of human plague consist almost entirely of cases of bubonic plague and are directly dependent on the occurrence of epidemic plague in rats. The development of the rat epidemic precedes the human epidemic by an interval of about a fortnight. There is no evidence that any animals except rats play an important part in plague epidemics.

(2) *Epidemic plague in rats.*

(a) Rat-fleas which have sucked the blood of a plague-infected rat can transmit the disease to healthy rats to which they are transferred. The plague bacilli multiply in the stomach of the flea, and the flea may be still capable of conveying infection three weeks after having imbibed plague infected blood.

(b) If plague-infected rats are kept in close confinement along with healthy rats, no epidemic of the disease occurs in the absence of fleas. In the presence of rat-fleas the disease spreads from the infected to the healthy animals, and the rapidity and severity of the epidemic so produced is in proportion to the abundance of fleas.

(c) Rats may be infected by feeding them upon the bodies of other rats dead of plague. The distribution of the lesions in the bodies of naturally infected rats corresponds with that in rats experimentally infected by means of fleas and not with that in rats infected by feeding.

The Committee, therefore, conclude that *in nature plague is spread among rats by the agency of rat fleas.*

(3) *Epidemic plague in man.*

(a) Bubonic plague is not directly infectious from man to man as is shown by the experience of plague hospitals where there is no tendency for the disease to spread from the sick to the attendants.

(b) Material epidemics of plague in man are always associated with epidemic plague in rats. Epidemic plague among rats provides a large number of infected rat-fleas, and owing to the mortality among the rats, brings these fleas on to human beings.

(c) Rat-fleas (*Pulex cheopis*) bite human beings, especially in the absence of their natural host.

(d) Rat-fleas containing plague bacilli and found capable of transmitting plague to animals may be caught in plague-infected houses.

(e) Animals susceptible to plague (guinea-pigs, monkeys) placed in plague-infected houses if unprotected from fleas may contract the disease; whereas such animals under the same circumstances remain free from plague, if protected from fleas.

(f) The Commission have also performed numerous experiments with a view of testing other possible modes of infection, and have found that:

i. In the absence of fleas no epidemic resulted when animals susceptible to plague (guinea-pigs) were kept in close contact with infected animals although the animals took their food off floors grossly contaminated by the excreta of their infected companions.

ii. Susceptible animals (guinea-pigs) caused to live upon and feed off floors artificially saturated with plague cultures failed to contract the disease.

iii. The excreta of plague-infected patients may contain plague bacilli, but the bedding, etc., of plague patients soiled with excreta containing plague bacilli was not found to be infective to highly susceptible animals caused to live in and upon the bedding.

The Committee, therefore, consider that *in the great majority of cases during an epidemic of plague man contracts the disease from plague-infected rats through the agency of plague-infected rat-fleas.*

(4) *The seasonal recurrence and spread of plague.*

(a) The Committee has obtained no evidence that under ordinary conditions the plague bacillus survives for more than a few days outside the bodies of men, animals or fleas.

(b) In large towns plague may persist throughout the year since a few cases of acute plague in men and rats occur during the non-epidemic plague season.

(c) In villages there is no satisfactory evidence that such persistence is of other than exceptional occurrence, and it seems probable that the recurring annual epidemics in such places are due in most cases to fresh importation of the infection.

(d) There is no evidence that plague infection is carried for more than short distances by the spontaneous movement of rats. Plague appears to be commonly imported into a fresh locality about the persons of human beings, though the transference of infected rats and fleas in merchandise must be considered.

(e) In districts which suffer annual epidemics of plague, the rat epidemic, on which the human epidemic depends, occurs during some part of that season when the prevalence of fleas is greatest."—*The I. M. G.*

The General Management of Diaketes Mellitus.

By.

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THE general management of cases of diabetes mellitus is one of the problems of medicine which speedily convinces the young beginner of the impossibility of dealing with all cases on one routine system.

may start hopefully with an idea that the whole problem consists in the speedy reduction of the amount of glucose in the urine, by due modifications of diet, and by the administration of some particular drug. Failures may perhaps be attributed to some unwillingness of the patient to submit to the rigid diet recommended, or to the disease being in too advanced a stage; successes, measured by the disappearance of glucose, may encourage the tyro to continue the routine in subsequent cases. At no great distance of time comes the conviction that the routine system is a failure, and that all cases of glycosuria cannot be treated according to one definite plan. In other words, experience soon shows that the mere presence of glucose must be regarded as an isolated fact, which in itself will not warrant a diagnosis of diabetes mellitus, and that even when a diagnosis has been satisfactorily made there are still many individual factors to be considered. The most important point is the determination of the particular type of the disease; it is generally recognized that the prognosis when this disease occurs in early life is far more serious than when it affects those of advanced age, but apart from the question of age, the treatment and the dietary must be guided by the presence or absence of sundry complications, some of which are only to be ascertained by the exercise of constant watchful supervision.

Assuming, for the purpose of description, that it is a question of the management of a young adult, presenting merely the ordinary symptoms of a mild form of diabetes mellitus, *viz.*, moderate degree of wasting and loss of strength, first, and increased frequency of micturition, it will be well to keep the patient in bed for a few days, in order to collect observations upon which the subsequent management will be based. At this period there should be no modification of diet, and no drugs should be administered. It is important, in every case, to know accurately the relation between the specific gravity and the total amount of urine passed in the twenty-four hours. From these data, and from the weight of the patient, still assuming the absence of serious symptoms, and of acetone or diacetic acid, it will be easy to construct a dietary. It must be remembered that there is risk in attempting to change the diet too abruptly; a sudden cessation of all carbohydrate food is frequently followed by the development of serious drowsiness or even coma. After the determination of the average daily loss of glucose, the right course is to remove from the dietary all forms of sugar a few days and to note the effect upon the daily excretion of glucose. This will probably fall to a great extent, even in the absence of any other treatment. During this time, however, the enforced rest will be likely to lead to some constipation,

which may be met by the administration of an ordinary saline purge. The next stage of treatment may now be commenced and it consists in the gradual elimination from the dietary of all other carbohydrates. This stage also demands the utmost caution, both with regard to the symptoms presented by the patient, and with daily testing of the urine for acetone and diacetic acid. The removal of carbohydrate should be accompanied by the administration of some substitute for bread, since this privation commonly causes the chief discomfort of the dietary of those afflicted with this disease. It is not necessary here to enumerate the various substitutes that are on the market; selection will probably be largely influenced by the taste of the patient. Some find all these substitutes unsatisfying, others may express a preference for some particular form, but in my experience the wisest course is to vary the substitute from time to time, in accordance with the wishes of the patient and not to endeavour to enforce the consumption of any one substitute after its use has manifestly become distasteful. During this stage, especially if there has been much wasting, it will be well to give cream and butter with a liberal hand, so far as this can be done without disordering the digestion. If digestive troubles should arise, there is no harm in giving an increased quantity of milk; this is generally readily taken, but the presence of lactose must not be overlooked. An increase in the daily elimination of glucose may necessitate a reduction in the amount of milk allowed.

Simultaneously with these measures affecting the diet, I am in the habit of attempting to reduce the acidity of the urine by giving fairly large doses of sodium bicarbonate. The best effects are obtained when the drug is given three or four times a day. It will generally be found that a reduction of acidity is all that can be attained by this method. An extraordinary persistence of acidity is one of the striking features of the disease. My records of hospital patients show that in spite of large doses of sodium bicarbonate, extending over many weeks, the urine has very rarely been rendered alkaline, and always speedily reverts to the acid reaction. It is further noteworthy that this persistent acidity is a feature of diabetes, quite independent of the presence of diacetic acid.

Since the enthusiastic advocacy of Dr. Pavy, it has been customary to employ codeine in the treatment of diabetes; some maintain that equal advantage can be derived from opium or morphine. Von Noorden asserts that after the amount of glucose has been greatly reduced by modifications of diet, the last traces can be removed by the use of opium

or of one of its alkaloids. This is a question which I approach with a certain degree of diffidence, since unfortunately my experience of these drugs has not been free from anxiety. On more than one occasion when administering codeine in quite moderate doses, the previous even course of the disease has been rather abruptly altered by the development of alarming drowsiness, which has disappeared with the discontinuance of the drug. Whether this drowsiness was the direct result of the hypnotic influence of the drug, or whether it was due to an arrest of the elimination of glucose, I should hesitate to say, but the occurrence has led me to be rather averse to the use of these remedies.

On the other hand, my results with sodium salicylate, and with acetyl-salicylic acid, have been extremely satisfactory, both when using these drugs in comparatively mild cases and occasionally when they have been employed for the relief of more urgent symptoms. When employing sodium salicylate in a case in which the glucose had been greatly reduced by dietary restrictions, the glucose ultimately disappeared during the administration of this drug, and the benefit persisted even when a moderate amount of carbohydrate was subsequently allowed. For a short time any attempt to reduce the amount of salicylate was followed by a reappearance of glucose, but eventually it was found possible to allow two ounces of bread to be taken, even when the salicylate had been discontinued.

After the general dietary and course of treatment have been decided upon, it is not necessary to keep the patient in bed; it will be found, indeed, that it is far better to allow a moderate amount of open-air exercise daily. This is of some importance, as it may obviate the constant need of laxatives.

It is customary for patients to request to be furnished with a list of the articles of diet which should be avoided, and in most cases they also wish to know what they may eat without danger. So many of these lists have been compiled that it scarcely seems necessary for me to repeat information which can be gathered from almost any text-book. I have elsewhere* dealt fully with this question and given reasons for rendering the list of articles permitted as comprehensive as possible.

Perhaps it is scarcely necessary to add that, in spite of every appearance of success in the treatment, it is well to warn the patient that from time to time the urine should be examined, and that any loss of weight should again lead to further advice and treatment. Diabetes is

* "Text-book of Medical Treatment, 1900."

essentially one of those diseases in which to be forewarned is to be forearmed. Unless this is clearly understood by the patient it is to be feared that serious deterioration may have taken place before the occurrence of some complication renders fresh attendance imperative.

When dealing with glycosuria in a person of advanced age the treatment rarely requires to be so rigid; there is often far less evidence of grave constitutional disturbance, and the condition is frequently far more amenable to the influence of dietary changes. Many cases are associated with gout, and possibly with chronic interstitial nephritis; hence the form of dietary has to be materially modified by these conditions. Such cases scarcely deserve to be regarded as examples of diabetes; they fall more truly into the category of gouty or of diabetic glycosuria, and accordingly are outside the scope of the present paper. When dealing with a true diabetes in a middle-aged or elderly patient although it is right to determine the daily elimination of glucose, and to ascertain the extent to which this can be controlled by modifications of diet, it is rarely advisable to enforce the same limitations of carbohydrates. Sugar should not be given, but it is well only to reduce the carbohydrates, and not to check their administration. This is essential for two reasons: first, a reduction usually suffices to check the appearance of glucose in the urine; and secondly, the complete removal of carbohydrates may be attended by undesirable loss of weight, and by great loss of vigour. Still it must be remembered that as in the case of young diabetics, the treatment must in every case be influenced by the special features of the case, and not be guided by routine.

For example, it is not uncommon for small traces of albumin to appear in the urine in the course of diabetes at any age; it is, however, far more likely to occur when the patient is fairly advanced in years. Under such conditions it becomes important to realize whether the presence of albumin should lead to any modification of diet. Formerly it was customary to encourage diabetics to eat enormous quantities of meat, under the idea that the reduced carbohydrate consumption entailed the need of an increased amount of proteid. This view has so far been abandoned that it is rarely necessary to enjoin a restriction of meat or other proteid on account of an occasional appearance of albumin. Further, it may be noted that even in the treatment of albuminuria, without the presence of glycosuria, modern treatment has undergone a change, and that it is only when dealing with acute conditions that it is now deemed advisable to check the administration of proteids on account of albuminuria. So far as the albuminuria of true diabetes is

concerned I have never found it desirable to modify the diet by reducing proteids; it may be necessary to enforce some change which shall further reduce the elimination of sugar, or to increase the action of the bowel, so as to diminish the total amount of urine, since albuminuria is most common when there is a large daily output; but except in these directions no change is essential.

With elderly diabetics it is important to reduce all extraneous causes of worry and anxiety so far as possible, but it is often a question whether it is wise to advise a business man to retire; good results may follow from a holiday, but it is generally better not to deprive such patients of some occupation and interest, otherwise they are only too likely to suffer from having too much time for the continuous observation of their symptoms, and this ordinarily leads to increased trouble.

This is, however, a point upon which it is impossible to lay down any rule; the nature of the business, and the circumstances of the patient in every case must be carefully considered, bearing in mind that the object in view is the reduction of strain and the avoidance of worry.

With regard to exercise in the open air, although some sense of fatigue is one of the common symptoms of diabetes, this weariness usually diminishes when the daily loss of sugar is controlled by judicious dieting, and it will then be found that daily out-door exercise is beneficial. This good result is commonly seen during a change of air, and especially during a stay at Carlsbad, where a large part of the improvement is probably to be ascribed to this influence. It is scarcely necessary to say that the effect of exercise should be noted carefully, and that when it is found to produce great fatigue the amount should be reduced. On the other hand, many observers have found that one satisfactory result of carefully-regulated exercise is a comparatively rapid diminution in the amount of glycosuria.

Reference has already been made to the need of purgatives in the treatment of diabetes; these are necessitated not only by the change of diet, but often on account of the remedies employed, which frequently tend to produce constipation. They are imperatively demanded whenever there is any reason to fear the onset of symptoms of acidosis, which they may tend to avert. In the selection of the purgative it is well to remember that salines almost invariably give the most satisfactory results, since they favour a reduction of the acidity of the urine. To a certain extent this affords the explanation of the marked benefit that is

sometimes observed after a course of treatment in one of the health resorts, to which so many diabetics gravitate. Of these Carlsbad, perhaps, has the greatest reputation, but there are others in which the waters are devoid of purgative properties; for example, Vichy, Neuenhar and Homburg. In the last the waters are saline, in the other two they are alkaline. The question of the benefits to be obtained from treatment in these health resorts has been very fairly discussed by von Noorden, who considers that by the internal use of mineral waters and by baths, &c., many complications of diabetes are favourably influenced. He refers particularly to "numerous disturbances of the digestive system which in part represent quite independent complication, but which in part are called forth or maintained by the peculiar mode of life of a diabetic." He notes also that other complicating conditions, such as obesity, gout, uric-acid diathesis, neuralgia, &c., appear to derive benefit from the Carlsbad cure. More recently attention has again been directed to the value of saline purgatives, given in massive doses for the relief of the urgent symptoms, and several cases have been recorded in which large doses of Hunyadi Janos water has produced not merely relief of the urgent symptoms, but also a marked reduction of the glycosuria. In this direction my experience has been somewhat limited, but the results obtained are certainly encouraging. One curious feature in connection with administration of these large doses is that the degree of purgation is by no means proportionate to the dose employed; large doses of the water seems to produce every little more purgative action than can be produced by an ordinary dose. Another interesting feature in the cases that I have observed is that although the amount of sugar, after a rapid fall following the administration of the massive dose of saline, speedily rises again, the level attained is far below that observed before the treatment commenced.

There are certain generalizations that hold good whether the patient is young or middle-aged. Thus with reference to the question of the use of fruit, there can be no doubt that most patients derive benefit from the judicious selection and use of numerous fruits that are relatively poor in their sugar content. The prohibition which is sometimes advocated seems to have originated in the frequency with which it is found difficult to prevent the addition of sugar to unripe or sour fruit, especially when cooked. Patients often complain of the trouble experienced in persuading their cooks to refrain from adding sugar, and yet it is surely quite easy for those of the family, who are in good health, to sweeten according to taste, without making the diabetic run any risks. Most

patients can take with advantage apples, pears and oranges, though both apples and pears contain a relatively large proportion of sugar, and accordingly their use must be experimental. It will often be found that some degree of individual tolerance is shown for certain forms of fruit, in the same way that some patients can take with advantage certain forms of starch. This fact is one of the most peculiar features of this disease, but it rests upon evidence which appears to be indisputable. Many observers have found that while starchy food in the form of bread will cause an immediate increase in the amount of glucose eliminated, yet some patients can assimilate the starch of potatoes without any apparent danger, while others do well with relatively large quantities of oatmeal porridge.

It must be clearly understood that all such experimental modifications of the dietary should only be made when the conditions permit of daily estimation of the effect upon the urine, and this practically means that such modifications can scarcely ever be advised unless the patient is in hospital or in a nursing home. Under such conditions it is possible to collect and measure the quantity of urine passed in the twenty-four hours and to appreciate accurately the effect of any change of diet upon the formation of glucose. Even should it be found that there is no increase of glucose when these modifications of diet are permitted, the possible influence upon the production of acetone or of diacetic acid must not be overlooked. It must be remembered that frequently before the onset of coma there is a marked diminution of excretion of glucose which might readily be construed into an indication of improvement if attention is riveted too closely upon this factor, while little stress is being laid upon other more important tests, and, possibly, an increasing drowsiness is being ignored.

Similar precautions are necessary when, with a view of maintaining or increasing weight, fats are being administered in liberal quantities. It is undoubtedly true that in many patients fat or cream is well tolerated; and that its consumption is attended with a decided increase of weight, but if at the same time there is a development of dyspeptic symptoms, or an increased formation of diacetic acid or of acetone, any of these changes must be taken as an indication for an immediate reduction of the fatty substances.

Apart from the above reservations, it may generally be assumed that an increase of weight, when accompanied by a sense of well being and cheerfulness, affords just ground for assuming that the dietary is suitable, even though small quantities of glucose may still be found in

the urine. On the other hand, a sudden reduction of glucose almost always calls for an increase, rather than a reduction of the amount of carbohydrate given daily. A sudden fall of glucose is almost invariably accompanied by acidosis, and the administration of carbohydrate forms one of the easiest and one of the best methods of dealing with this danger, before it has produced alarming symptoms. Simultaneously, it is advisable to give sodium salicylate and sodium bicarbonate with a liberal hand, the amounts being guided by the effect upon the urine, and upon any symptoms of drowsiness which may have ensued. A detailed description of the modes of treating diabetic coma would, however, carry me beyond the limits of the present paper.—*Folia Therapeutica*.

Hydrogen Peroxide for Cystitis.

The utility of hydrogen peroxide solution in the treatment of all manner of suppurative conditions is already well known, but its use for lavage of the bladder in conditions of cystitis has not hitherto been suggested. One might suppose that the evolution of gas which takes place when the hydrogen peroxide comes in contact with a suppurative surface would be liable to produce undesirable consequences. This does not appear, however, to be the case. Dr. A. Weith, of Lucerne, has tried the remedy in a single case and is much impressed with its efficacy. The patient was a man aged eighty-four, suffering from enlarged prostate and a purulent cystitis. Treatment by lavage with boric acid solution, and occasionally with a weak solution of silver nitrate, failed to effect much improvement in the course of about three weeks. Dr. Weith then had recourse to treatment with hydrogen peroxide. He commenced cautiously and first washed the bladder out with 200 grammes of hydrogen peroxide of only two volumes concentration. The result was entirely satisfactory. Bubbles of gas escaped freely but caused no pain to the patient, only a feeling of warmth. The condition was so much improved that no further lavage was carried out for three days. After two applications the strength of the hydrogen peroxide was increased to three volumes and at the end of another three weeks the patient had completely recovered. Although the experience of one case is insufficient for any definite conclusions, the result certainly justifies a more extended trial of hydrogen peroxide lavage in cases of cystitis, as its efficacy in other suppurative processes is already so well established.—*The Hospital*.

SURGERY.

Open Ethyl Chloride for Minor Operations.

By

R. W. HORNABROOK, M.B., M.R.C.S.

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Two years ago I started administering open ethyl chloride (kelene) followed by open ether for any cases requiring a general anaesthetic. The success which attended this method, and the comfort the patient had whilst going under the anaesthetic led me to think of the possibility of open ethyl chloride for minor operations. About six months ago I started with my first case of open ethyl chloride for the removal of adenoids and tonsils, having previously given nitrous oxide for this class of case; I found the open kelene much more satisfactory, in that there was a free supply of air to the patient during administration, and that no unsightly, distasteful inhaler was required. The patient had no feeling of suffocation, and the passing into unconsciousness was not unpleasant, and more in the character of a floating away sensation. Since the first case I have used no other method for all minor operations, such as the removal of adenoids, tonsillotomy, extraction of teeth, opening of abscesses, removal of aural polypi, etc., and now have a record of over 800 cases, a third of which number are for the extraction of teeth. In no case have there been any symptoms arising from the ethyl chloride to cause anxiety to operator or anaesthetist, and in no case have I refused to administer open kelene, though some of the cases would have caused me to refuse or be very careful as to how an anaesthetic by any closed method should be used. Patients of all ages have been anaesthetised by this method, from young children (4 or 5 years) to old people of over 80, my oldest patient being a man of 87 years.

In teeth extraction, as a general rule, the open ethyl chloride is given with the patient sitting straight up in a dental chair. If, however, the patient is very anaemic, or looks sickly, or in the case of young children, or if the patient is subject to fainting attacks, the chair is thrown back so that the body reclines at an angle of about 30 degrees.

The primary effect of open ethyl chloride is to cause cardiac stimulation and cerebral congestion; if a finger is kept on the pulse, it is found that the heart-beats gradually increase in rapidity and then gradually slow down under deep anaesthesia to somewhere near the normal. The state of anaesthesia induced is not a deep one; in fact the corneal

reflex is generally well marked, and very often if an attempt is made to open the patient's eye he will resist it. At the same time the dentist has no difficulty in extracting teeth, and the patient will feel nothing. The duration of anæsthesia by open ethyl chloride is from one minute to one and a half minute in ordinary cases. If the patient is a feeble or sickly looking individual, I am very careful not to push the anæsthesia, but administer the ethyl chloride so that no sudden or concentrated dose is given to the patient, and after from one minute to one and a quarter of inhaling the kelene vapour, I allow the dentist to start. This gives him time to take out three or more teeth as a general rule. The patient is then allowed to come round, and a second dose is administered if necessary. I have only once thought it not advisable to administer this second dose, and that was in the case of a very sickly woman of 38 years, who had only given birth to a child a month before, and had had a severe hæmorrhage. Her mouth was in a very bad state with abscesses under the gums, and her heart-beat was very irregular. She wanted eight teeth out. I gave her the anæsthetic, and five teeth were taken out. There was no difficulty either during or after the administration, but in view of the state of her health, I thought it better not to give a second dose.

In several cases a second administration of ethyl chloride, and in one case a third, was given straight away on the same patient, without any trace of ill effects, and in no case has the patient objected to taking this second dose; even children have raised no objection to it, showing that the method cannot be an unpleasant one.

Alcoholics take open ethyl chloride with ease, but care must be taken that the patient is sitting upright. An alcoholic in a prone position, it is almost impossible to put deeply under, owing to the cerebral congestion and excitement that is apt to be caused by the drug. In fact, in all adults, especially if at all robust and full blooded, it is best to keep the head raised on an inclined plane for all operations under open ethyl chloride—that is while the patient is going under; the head can be lowered afterwards if necessary, as in post-nasal work.

The method adopted in dental work is as follows:—The ethyl chloride (kelene) bottle No. 70 is taken and the lever gently raised to see if the drug drops freely; if it sprays out all round the stopper then a small piece of cotton-wool is placed under the stopper and the lever again gently raised. It will then be found that the kelene runs freely down the cotton wool drops off the end. The reason for making the drug drop and not spray is that less is wanted, and there is not such a tendency

for the kelene to freeze the mask as if sprayed. No. 70 bottle of kelene is used because the smaller sizes are for local anæsthesia, and the spray being finer does not drop freely enough. The drops must be fairly rapid. The next is the material to be used for the mask. This must be of an open nature, so that, on holding it up to the window, light can be seen through it, but at the same time especially in the case of adults, it must be of a *fairly heavy* character. The material that I use is flannel or cotton huckaback, as used for cheap towels. In the case of children the material is lighter, the heavy cloth not being necessary, and moreover it is apt to lead the anæsthetist to drop more kelene than is necessary on to the mask and to give an unnecessarily concentrated dose. The material used for the mask is of importance, and it is absolutely necessary that the mask must *fit*; the patient has to breathe *through* the cloth moistened with anæsthetic.

Having chosen my towel, I turn up about one inch round the edge. This is for two reasons: firstly to stiffen it so that the single portion stands off a little from the patient's face and does not collapse on to the mouth when moistened, and secondly to force the patient to breathe through the single layer which is moistened with the kelene.

For the extraction of teeth or post-nasal work, the gag (Mason's I find the best) is placed in the mouth *unopened*, and the patient told to close his mouth gently but *not to bite the gag*. If the patient bites hard on the gag the anæsthetist will find that on attempting to open it when the patient is under, there is rigidity. This, however, is easily overcome; if the patient leaves the gag loosely in the mouth, then there is no sign of rigidity when the patient is under, and the mouth opens without an effort. I never open the gag before the patient goes under in any case. Thus the very uncomfortable feeling of having one's mouth strained open is avoided, and things made more natural and comfortable for the patient.

Should a child be very frightened of the gag, I do not force it on her, but leave it out and put it in when she is under the anæsthetic. It only takes a second or two to do this.

The towel is now placed over the patient's face so that one border of it hooks under the patient's chin and the remainder comes up over the patient's face, covering the mouth and nose, but leaving the eyes quite free. The anæsthetist sees that the towel fits the patient's face well, and tells him to breathe naturally and quietly, and that there will be no feeling of suffocation, but that after a few breaths he will find a swimming or floating away sensation coming over him. A few drops (about

10) are dropped on to the towel over the region of the nostrils and mouth. The dropping of the kelene is not continuous. Such means only waste of the drug and freezing on the towel without evaporation, and by avoiding continuous dropping the danger of throwing a concentrated dose of ethyl chloride into the system is avoided. The towel is kept moistened with kelene, and in from one and a quarter to one and a half minutes *from the start* of the administration the patient is ready for the operator. The amount of ethyl chloride used is, as a *general rule*, about 5 c.c., or a little less. The patient is known to be ready for the operation by the change in the character of the breathing. This becomes more rapid, and on placing the hand gently over the trachea, the vibratory character as in a gentle snore is felt, or there is loss or nearly complete loss of corneal reflex. Personally I do not push to loss of reflex, and try to avoid it in every case. A very good guide is the time taken from start of anæsthesia, and this is almost invariably from one and a quarter to one and a half minutes in adults; in children about one minute. It must be especially noted, however, that the towel must fit the face, or the air passing in and out of the patient's mouth will take the channel of least resistance and the patient will not go under at all. It has been very noticeable in a number of cases that the hearing of the patient has been present, but no feeling of pain; patients have had teeth out, and whilst in the middle of the operation a remark has been passed and on coming out of the anæsthetic the patient has drawn attention to the remark, and yet said he did not feel the teeth being taken out and had no pain. In one case after four teeth had been taken out, the patient, a woman, sat forward in her chair and said: "Wait a minute." I told her to sit back and open her mouth, when two more teeth were taken out, and yet the patient did not feel it.

The recovery from ethyl chloride administration is very rapid. Vomiting practically never occurs unless, as in some post-nasal cases, the patient swallows some blood, when he brings it up again. There is feeling of marked fulness in the head; this, however, passes off in a few minutes, and more quickly than after any closed method. As to the advantages, I know of no other method of anæsthesia so pleasant for the patient; there is no complicated inhaler, nothing to frighten even a child, and the method is a clean one. Moreover, there is a free supply of air with it and conditions are kept fairly normal, with no sudden strain thrown on the heart, and there are comparatively no after effects, recovery is rapid, there is no vomiting (this was noticeable even in several cases where a meal had been taken only shortly before the anæsthetic was given), no secretion of mucous and the fullness in the head

rapidly passes away. I have seen no sign of collapse by the open method, but I do not say that if the drug is not properly handled on a weakly subject there would not be or might not be collapse, especially if concentrated on the patient. In ordinary adult cases, just before telling the surgeon that the patient is ready, and for about ten seconds, I hold my hand over the towel and concentrate the ethyl chloride a bit on the patient. This is not, however, a very necessary part. The amount of ethyl chloride that can be given by the open method to a healthy adult is almost any quantity. I have kept a patient under it for 20 minutes and used 60 c.c. on the case, and in another case I used 25 c.c. on a woman, allowing her to come nearly round three times before putting her under again, and it was very noticeable that in neither case was there any sign of an overdose or trace of collapse, and the patient came to just as rapidly as after a small dose. I do not, however, recommend any such treatment, and think that for prolonged operations open ethyl chloride followed by open ether is far superior. In a very nervous lady the other day four teeth were taken out under open kelene, and, after the dentist had finished, I gave the patient a few more c.c.s. of the drug, and she had her post nasals and turbinates removed, about 10 c.c. being used altogether—there was no trace of any trouble. In a great many cases where several teeth have had to be removed and the patients were adults I have given more than one administration, and never with any trace of collapse or objection on the part of the patient.

In comparison with nitrous oxide and ethyl chloride administration, I do not think it gives quite such a long anæsthesia. The difference, however, is very slight. The nitrous oxide and ethyl chloride also uses very little ethyl chloride—from 1 to 2 c.c. in the majority of cases. With this method, however, the mouth has to be gagged open and a complicated inhaler is placed over the patient's face, which very often frightens children, and is certainly not as comfortable for the patient as the open method.

Are there dangers with the open method? Yes, I think there are if any attempt is made to throw a concentrated dose of ethyl chloride on to the patient and the patient is in a weakly condition, but that applies to any method, and personally I would prefer the open method to all others. However an anæsthetic is handled, it is possible to over dose the patient or cause shock if its action is not fully understood and the condition of the patient is not grasped by the anæsthetist.

In place of the No. 70 bottle of kelene, the 5 c.c. ampoule of kelene may be used by breaking off the end of the ampoule and placing on it a

small rubber tube about four inches in length and allowing the kylene to run off the end on to the material used as inhaler. I have found this latter method very successful with full-blooded males and alcoholics when a freer supply of kylene is required than in ordinary cases. In dental work, cases that have proved troublesome with any closed method, such as ethyl chloride, or nitrous oxide and ethyl chloride, have taken this open method without any difficulty or trouble to the operator.

The following notes from a medical man, detailing personal experiences of the method, may prove of interest:—

On several occasions I have administered open ethyl chloride to myself and have always found the anæsthetic pleasant to take, with no uncomfortable after effects. A medical man to whom I gave the drug the other day for removal of his turbinators describes his sensations as follows:—

"The odour of the anæsthetic resembled chloroform and was very pleasant indeed. I heard you telling me to let you know what I felt, and I remember saying I felt it in my arms and legs. What I did feel was a pleasant glow in my forearms and in the calves of my legs. Then I felt my respirations deepening and slowing, as I thought, to about 12 a minute. I felt as if I were about to unclasp my hands, which were folded together, and I did disengage my index fingers, but changed my mind and tried to replace them, but they would not move. I seemed to know that I was losing consciousness and to be fully aware of the reason, for I thought how strange that next moment I should be mopping my nose, as I had seen others do. The next I remember was a feeling of exhilaration and the idea that I was running on the pier at Portsea, a place I had left two days before. One of the boys whom I had met there said, 'Well run, old man; take the gag out.' Before this was said I knew the operation was over. Then someone took the gag out, and I realised that I was sitting on the operating table with my legs over the side. I was told to step down from the table, but I knew that I had untied my pyjama strings and I had to ask the operator to tie them, for my hands would not do anything so complicated. I then walked out of the operating room, upstairs, and got into bed. I had no headache and no after taste of the drug. There was no sense of depression after the exhilaration had subsided. As to consciousness of time, I thought it took a quarter of a minute or so to arrive at deep respiration and then half a minute of deep respirations, then unconsciousness, then 30 or 40 seconds from waking to being back in bed, after that all was normal

Thanking you for my pleasant experiences."—*The Australasian Medical Gazette.*

Acute Appendicitis Ten Hours after Labour.

BY

J. W. BALLANTYNE, M.D., F.R.C.P.E.

A primipara, aged 20, after a normal labour was delivered on Sept. 16 at 6.55 A.M. She progressed quite well till 5 P.M. when she suddenly vomited some greenish matter. She then shivered a little but had no actual rigor. The temperature was 100° and the pulse 110. Before delivery the former had been 98.4° and the latter 80. The respiration rate suddenly rose to 36. There were no abnormal signs in the lungs or abdomen save for some tenderness in the right loin. Thinking that she might have been very constipated before delivery, the writer ordered a large enema and colocynth pills; but the enema produced no result, and the pills were vomited. At 8 P.M. she was still breathing very rapidly. Another enema was given without result. At 1 A.M. on Sept. 17, she was complaining of severe pain in the right side. The abdomen was moving but there were marked tenderness and a slight resistance in the right iliac fossa. There was great distension of the upper abdomen, and the liver dulness was diminished. Except for slight impairment of resonance at the right base the lungs showed nothing. The patient, however, had all the general appearances of a severe illness; and a surgeon who saw her in consultation said that but for the fact that she was in the early hours of the puerperium he should have counselled opening the abdomen. Another enema was given with no effect, and she vomited two pints of dark bile-stained fluid. A little later an enema containing glycerine and Henry's solution was given, the lower end of the bed being raised on high blocks during the process but again there was no result. Pityary fluid (minims x) was given intra-muscularly at 5 A.M., and repeated at 5.46; but it produced no effect on the bowels and had no influence on the pulse rate. In the morning there was a temperature of 99.8° and a pulse of 120 and she felt better, but the abdominal condition was unchanged. Some form of intestinal obstruction was diagnosed and the abdomen was opened. Free fluid was found in the peritoneal cavity; the tip of the appendix was gangrenous and perforated; the appendix was removed. She was seriously ill after the operation and only gradually recovered.

This case shows that even in a patient who has not been ill during pregnancy appendicitis may occur in the gravest form in the early hours

of the puerperium. Immediate laparotomy may give a chance of recovery.—*The Medical Review.*

Chloroform versus Ether for General Anaesthesia.*

By

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It is obvious that in the selection of an anæsthetic the question of safety is paramount. Possibly it would be more correct to say "the question of the least danger." For it should never be forgotten that the state of anesthesia is always one which carries with it some danger.

It is not unusual to settle this matter of the choice of an anæsthetic out of hand, by a citation of the handy and inevitable table of statistics in spite of the acknowledged fact that any proposition under the heavens may be proved by these same statistics. But because one agent is statistically safer than another, it does not follow that it is really and always safer. In fact, I know of no subject the statistics of which are more confusing, if not misleading, than that which presumes to settle the matter of the choice between chloroform and ether for general anesthesia. To quote from Dr. Buck's great work, the statistics of anesthetics, like other statistics, may be selected and manipulated in such a manner as to prove the particular views of a given writer, whether he favor the one or the other anæsthetic. A striking example of the untrustworthiness of individual statistics is shown in the following, taken from Buck. Ainslie furnishes a series of 3,058 chloroform administrations, out of which he reports 21 deaths, or one in every 145 administrations. Alongside of that was a series reported by Laurie, of 50,000 consecutive chloroform administrations without a death. The article says further: "It is obvious that to determine rightly the proportion of fatalities to administrations, individual statistics and smaller groups from various reliable sources should be put together till a large mass has been formed, the deductions from which should be of the greatest possible value." Then the article proceeds to furnish such a "large mass" from various sources, to which it is presumed we are to attach great importance, but which are so much at variance in the different deductions therefrom that it seems to me that the whole thing is robbed of importance, if not justly under the suspicion of having been manipulated with the object of establishing the particular views of the statistician furnishing any particular series. I don't wish to be understood as desiring to charge anyone with intentional unfairness,

* Read by title at fifteenth annual meeting of Association of Surgeons of Southern Railway, Richmond, Va., May 24-26, 1910.

But there is a well-known maxim that no one is so blind as he who won't see, and it is equally true perhaps, that there are some very good people who won't see anything they are not looking for.

In one series of these statistics of over half a million of chloroform administrations and nearly as many of ether, the fatalities from chloroform were as one to 3,258, while from the ether they were as one to 14,987, nearly five times as great with the former as with the latter. Proceeding through records of other large numbers of administrations, the proportion runs all the way down to twice and less than twice the fatalities attributed to chloroform over ether. Then, indeed, with such wide diversity of results in the hands of these different operators, how can we escape the conclusion that their statistics are, if not worthless, worth much less than we are asked to value them at.

It is the custom to set it down as presumption for a practitioner to claim that his individual experience affords any basis upon which to rest a theory but it seems to me that it is fair to contend that the experience of any fair and honest observer is not without value, and it nearly approaches stultification for any one to summarily set aside such experiences. There are, doubtless, a number of men here to-day who have administered chloroform in numberless instances, covering periods of many years, and without a single fatality. There are also, doubtless, men here who have had trouble with ether, and statistics or no statistics, I incline to the opinion that the matter of the greater safety of ether over chloroform is not nearly so definitely settled as is claimed by many, probably a majority of anesthetists. I am inclined to venture, time too, that notwithstanding the prejudice that prevails at the present against chloroform, the day will come when the verdict will be, if not reversed at least materially modified. There are unquestionably fashions in medicines as there are in bonnets. As Abraham Jacobi has said, the rankest error sometimes insinuates itself into medicine, and after it has been read and published and re-read and re-published a sufficient number of times it finally reaches the dignity of a scientific truth. I cannot help suspecting that a persistent reiteration is responsible for the disfavor which rests upon chloroform for general anesthesia.

A short time ago I read from a great authority the opinion that there is an unjustifiable mortality from anesthetics, no matter which is employed. He said that in their administration accidents were very apt to be the fault of the anesthetist. Really I cannot reconcile the enormous mortality reported by Ainslie and some others except on the hypothesis just stated. I would by no means go so far as to endorse it

unqualifiedly, but I do not hesitate to aver that I have not unfrequently seen anesthetics administered in a way that filled me with horrible apprehension, and I have been curious to know whether it is not the careless handling of chloroform that is largely responsible for its reputation for greater danger. It is well known that its action is more prompt and positive than that of ether, a fact which makes it extremely important that the rule of strict attention to the business in hand should be rigidly adhered to. The author just now quoted says: "In cases of naturally calm and self-possessed individuals the subject often passes to perfect unconsciousness without a word or movement. As a rule, furthermore, the period of active emotional display is short and unconsciousness supervenes not much later than four minutes after the beginning of the inhalation." Now, notwithstanding the distinguished rank of the authority quoted, I venture to suspect that this statement furnishes one key to the reason why chloroform has the reputation of being more dangerous than ether. The administration of either anesthetic carries with it, and almost at the beginning, besides the fright which has in itself been accredited with causing death, also certain shock, and it is probable that the period of greatest danger is at or near the beginning of the inhalation. On this account, I am fully persuaded of the propriety of starting the administration very slowly and cautiously, and then of maintaining it with a careful and appreciative watch upon the subsequent course of the operation. I devoutly believe that chloroform is as nearly safe an anesthetic as the list affords. Indeed, no less an authority than Sir Joseph Lister has said: "Chloroform is not only the best general anesthetic known to the profession, but properly administered, it is also the safest." I am sorry I have not at hand the proceedings of the celebrated Hyderabad commission of a few years ago, since that large body of representative scientists announced as the result of their exhaustive investigations practically the same conclusions.

Being aware of the fact that the late Dr. Hunter McGuire of this historic city was favorable to chloroform for general anesthesia, I wrote to Dr. Stewart McGuire, the distinguished son of his distinguished sire, asking him for contributory facts to help me construct my defence of an agent so valuable to the profession. His response was prompt, gallant and much to the point. He sent me a copy of his eminently practical work on the Principles of Surgery, from which I cannot otherwise do so well as to quote from the chapter on the relative merits of ether and chloroform. He says: "The question of the relative merit of ether and chloroform is one which has caused bitter and often unprofitable debate.

It is a fact that surgeons inherit their advocacy of one or the other agent, just as they inherit their political principles or their theological belief, and it is as hopeless to try to convert an advocate of ether to chloroform as it would be to change a Republican to a Democrat or a Baptist to an Episcopalian. In America, the North and West give ether practically to the exclusion of all other anesthetics, while in the South chloroform is the favorite agent employed. As the most prolific writers and brilliant clinicians live in the North (please understand that I do not feel called upon to endorse that line of the distinguished gentleman's article), there is a tendency in the South, among the younger generation, to either adopt their teaching, or else to apologize for using the anesthetic of their forefathers. In justice to chloroform it must be said, however, that it is still the favorite anesthetic of surgeons the world over, and is, to day, given twenty times where ether is given once. In France, except in the City of Lyons, in Germany and Austria, except in Vienna, in Italy and in Great Britain, chloroform, or a mixture of chloroform with other agents, is practically universally employed. Chloroform is also exclusively used in tropical countries, but there there is no choice, because ether with its low boiling point cannot be employed."

There is no question that chloroform is more pleasant, to the patient; is quicker in its action, causes less nausea and vomiting, and is not as likely to be followed by nephritis and pneumonia.

Anesthesia can be produced and maintained with a smaller quantity, and hence this agent is cheaper and more easily transported. Its vapor is not inflammable, and hence can be used without danger in the presence of an actual cautery or an open flame.

The advocates of ether admit all these facts, but claim that they should not be taken into consideration, as the question is not one of esthetics or economy, but of life and death, and that it has been successfully demonstrated that ether is safer than chloroform.

They claim that chloroform causes one death in 2,500 cases, while ether causes only one in 8,000 cases, and therefore is three or four times safer than chloroform. Statistics from numerous and reliable sources in the North and West seem to conclusively prove this statement as far as that territory goes, but figures in the South, on the Continent and in Great Britain are different.

Nussbaum has seen in military life, 40,000 administrations of chloroform without an accident. Hunter McGuire reports 28,000 administrations in the Confederate Army Corps, of which he was a director,

without a fatality, and Stewart McGuire, in private practice, has been present at 15,000 operations done under chloroform anesthesia, without a death from its use.

The latter observer says that after much thought and observation he has come to the conclusion that while one class of cases take one anesthetic better than another, provided they are administered equally skilfully, for practical purposes it is the anesthetiser and not the anesthetic which should be most considered. He states that in visiting the clinics of the North and occasionally seeing the administration of chloroform, he has ceased to wonder why sometimes patients die, and is surprised that any of them live; while in his travels South, he is struck with the timid, inefficient way in which ether is administered in the few cases in which it is employed, and marvels that the surgeon after completing the unsatisfactory operation on a struggling patient should ever use that agent again.

His conclusion is that no one man is competent to give both ether and chloroform; since while the end to be accomplished is the same, the method of administration and symptoms of danger are absolutely different. In his private hospital he uses chloroform almost exclusively. In his public clinics, he employs both agents, but given by different men, each specially skilled in the administration of the one he uses. In out-of-town work, when asked which he prefers, he decides upon the one with which the anesthetiser is most familiar.

So, with Laurie reporting 50,000 consecutive chloroform administrations without a death, Nussbaum, 40,000 without an accident, Hunter McGuire 28,000 without a fatality, Stewart McGuire's 15,000 free from disaster, and with the certainty that these figures might be added to indefinitely, and setting all these over against the 21 deaths Ainstie tells of in 3,058 chloroform administrations, the conclusion seems to me inevitable, that while it is possible to kill a man with chloroform, if one tries hard enough, or if he does not try hard enough to avoid it, it is possible to get infinitely better results; and it further seems to me to be a fair deduction, that the surgeon who does not use chloroform, and who does not get a great deal better results, fails of accomplishing an easy possibility and loses the benefit of a most valuable agent in his work.—*The International Journal of Surgery.*

OBSTETRICS AND GYNÆCOLOGY.

Early Diagnosis of Pregnancy.

A. Spire believes that it is possible in all normal cases to affirm the existence of pregnancy as early as the second month in so far that it is a clinical if not a medico-legal certainty. The reasons for this diagnosis will be the cessation of menstruation and the changes in shape and consistency of the uterus and in its position. Suppression of menstruation is a point of the first importance in establishing pregnancy, provided that the patient has had her menses regularly throughout her life. With persons whose menstruation has been irregular it is of less value. Outside of pregnancy troubles must be severe to stop a regular menstruation. Those persons who think that they have had their menses during pregnancy have been mistaken, due to a mistaken interpretation of the facts; the flowing that has occurred has had neither the character nor the duration nor the periodicity of the menstrual period. Inspection will show the changes of the breasts, the mammary areola, and the violet coloration of the vulva. But the most important points are obtained by abdominal palpation conjoined with vaginal examination. The large, soft, hypertrophied cervix may be simulated by other conditions of the uterus due to disease. It is to the changes in the fundus and body of the uterus that we must look for valuable information that is not to be confounded with signs of disease. For the vaginal examination the bladder and rectum must be emptied, and two fingers introduced into the vagina. The enlargement of the body is plainly felt, its shade is globular, and this is especially to be appreciated in the lateral culs-de-sac. The change in consistency is great; it gives a sensation of elastic softness to the examining finger, like a ripe fig. The region where cervix and fundus join undergoes softening, such that it seems to yield before the finger and the body may seem to be separated from the cervix. With the two fingers in the vagina, one on each side of the body, we may tip it from side to side. If the contraction of the uterus can be felt it is a still more positive sign.—*The Canadian Practitioner & Review.*

THERAPEUTICS.

Electrical Treatment of Infantile Paralysis.

An exhaustive report upon the whole question of electricity in the treatment of infantile paralysis has been prepared by Zimmern and Bordet. The treatment, they state, is based upon precise

physio-pathological indications—it is a rational therapeutic. Its principal purpose is to reduce to a minimum the infirmities caused by the medullary lesions, and to restore as far as possible the voluntary contractility of the muscles. Of all the physical agents, electricity is the only one which is capable of provoking a muscular contraction analogous to the voluntary contraction. Massage does not produce the physiological contraction of the muscle, and the misleading appearance of suppleness to which this method gives rise when it is used by itself renders it inadvisable. As an adjuvant to electrotherapy, the authors are of opinion that the role of massage is an insignificant one. The choice of a current depends upon the results of the electro-diagnostic exploration. If the muscles have conserved faradic excitability, recourse may be had to the currents of the induction coil. Galvanic interrupted currents are employed when the degenerate muscles respond to that form of excitation. Great care must be taken to avoid fatigue, and the authors proscribe the automatic electrization of groups of muscles. Electrical intervention should be made very cautiously at the beginning of the treatment. There should be no attempt to make a complete electro-diagnosis at the first *seance*. When the treatment is fully established the *seances* may last for an hour, providing always that there is no fatigue. The repetition of the *seances* should be very frequent—taking place every day during the active period of treatment, and, if possible, twice a day. The duration of the whole treatment, unfortunately, must be counted by years. It is rarely that one year suffices, more frequently it requires three. The treatment may be suspended with advantage during the summer months, and the patient sent to the seaside or the mountains. This change of air, without acting directly upon the paralysis, is of value to those children whose general state has suffered from their inactivity. During the second year of treatment the authors counsel the use of light orthopædic appliances, and during the third year these, together with kinesiotherapy, may be increasingly employed, while the degenerate muscles are still electrized with persistence. The cessation of treatment is indicated when, for many months, the amelioration has shown no progress, either from the point of view of the voluntary movableness or from that of the electrical reactions. Summarizing the whole subject, the authors state that if the treatment is started sufficiently early and continued with method and persistence, it produces, as a rule, in the course of time a reduction of the impotence and a return, more or less remarkable, to functional power.—

The Canadian Practitioner & Review.

THE ANTISEPTIC.

APRIL, 1911.

Diet in Tuberculosis.



HE prognosis in pulmonary tuberculosis (of the comparatively incipient form) rests a great deal on the condition of the stomach and the digestive tube. So long as we do not succeed in conducting a direct and effective campaign against the established tubercle bacilli in the lungs, and so long as we have to depend chiefly on reinforcing the bodily resources of vital resistance, we have to organise the means of self-defence available in the human body. Drugs are but helps, to maintain the vital organs in a state of comparative health (apart from the toxæmia due to the lung lesion), and to relieve definite symptoms incidental to the course of the disease. And, "specific" treatment is uncertain in its results, although holding out greater promises in the future. When drugs have failed, and when sera and tuberculins are in their experimental stage, we have to fall back upon the conserving measure that aims at establishing immunity in the tissues. To attain this end, we advise regular and hygienic living, rest, with or without gentle exercise according as the temperature and pulse may permit, and an easily assimilable and sufficiently nutritious food. The slow and insidious march of the tubercular toxæmia produces serious inroads upon the metabolic resources of the body, resulting in loss of substance—chiefly the albuminous substance of the tissues—and indirectly a fall in the resisting powers of the consumptive. Side by side with the wasting of the tissue proteids (as indicated by a progressing reduction in weight) there is the lessened capacity for nutrition on the part of the digestive organs. The quality and quantity of the digestive juices become poor, affecting digestion and assimilation, and loading the alimentary canal with decomposing materials that add to the sources of toxæmia.

The food of the consumptive, therefore, must have certain properties, namely :—

- (1) It must be easy of digestion, and

(2) It must be of such a nature as would stimulate the cells of the body to renewed activity, besides replacing lost tissue.

It would be interesting if observations were made of the altered composition of the digestive juices, in cases of tuberculosis, with a view to making up for deficient constituents that are required for proper digestion. To secure ease of digestion, we should prescribe regularity of meals, moderation, exclusion of articles difficult of digestion by the disabled alimentary canal, and an increase in those constituents that are easily assimilable and greedily accepted by the cells. Super-alimentation has had its day—and its toll of victims. Feeding up to and even beyond the digestive capacity of the consumptive, would only add a diseased stomach to the diseased lungs of the sufferer. It is certain to originate gastric catarrh, and, if persisted in, would seriously jeopardise the life of the victim of "forced-feeding." If only our digestive organs would digest and assimilate for us *all* the food that we are capable of stuffing ourselves with, why then, we could fight out all kinds of infections by ordering out a few extra dinners every day, in addition to the already over-filled programme on the table! If "forced feeding" would not suit one in normal health, much less will it suit one in a disease where every effort must be made to husband the vitality of the body. Although the tuberculous dietary is somewhat richer than the normal in certain respects, that dietary is arrived at by modifying the proportion of the constituents in such a way as to enable the organs to extract more nutriment out of them in an agreeable manner. How can this be effected?

Foods may be classified into:—

- (a) The *fuel foods* or carbonaceous foods—starches, sugars, fats; and
- (b) *Constructive foods* or nitrogenous foods—meat, eggs, etc.

Of these two classes, the "fuel foods" form the source of bodily heat and energy. The "constructive foods" on the other hand, repair waste and build up tissues. These nitrogenous foods, while they nourish the tissue cells, also increase the immunity of the individual to infection. Bauer, Bardwell and Chapman say that *proteids* increase the activity of tissue cells and *raise their power of resistance to disease*. In tuberculosis, where rest is an essential element in the treatment, we do not need food to augment the production of heat and energy. Nay, in such a case, a *reduction* in the "fuel foods" is of advantage because it facilitates a more complete assimilation of the proteids. And, in order to replace tissue albumen and to stimulate the vitality of the cells, we require a diet that is abundant, highly nutritious, and easily assimilable. A diet rich in proteids meets the requirements best.

And of the proteids, those of animal origin are more readily made use of than those of vegetable origin—the latter are far more apt to cause digestive disturbance than animal proteids. *Raise the proportion of proteids to 30 per cent over the normal diet, and decrease the starchy constituents to 50 per cent of the normal.*

The fatty elements of food (cream, butter, nuts, etc.) should be increased 200 p.c. or more, in order to be utilised as proteid-sparers. The basis of a properly balanced dietary may be found on meat, eggs, milk, butter (ghee, etc.) bread, rice, potatoes and fruit. The diet for an average consumptive is outlined by Dr. Hull as follows:—"Two quarts of milk, five eggs, four ounces of meat, one and a half ounces of butter, two ounces of nuts, four ounces of bread, three and one half ounces rice; three ounces each, of potatoes, peas and oatmeal; one ounce sugar, one ounce raisins, one apple and one orange." This furnishes us with 145 grams of proteid, 165 grams of fats, and 300 grams of carbohydrates. The fuel value of the above is 3,300 calories. Under this dietary the weights of the patients went up. The normal food value for an adult in health is stated to be 3,000 calories, although Chittenden thinks that for the brain worker, this is far too high an estimate. However, for a tuberculous subject, a slight excess above the normal calorific value (basing the normal on 3,000 calories, for the average adult) has had good results so long as proper food was supplied, within his assimilable capacity. We admit that an increase of proteins can effect the restoration of the albumen loss in tuberculosis, provided, there is no proteid intolerance on the part of the alimentary canal, the tendency to constipation is corrected, the liver is equal to the task of elaborating the urea, and the kidneys are in a fit condition to excrete the nitrogenous waste. Such cases have a better prognosis if the disease is not far advanced. But where proteid intolerance is pronounced, we have to fall back upon the fats and other carbohydrates, provided also there is no intolerance for this latter class of foods. Or, a judicious adjustment of the proportions of proteid and carbohydrate food stuffs, so as to procure variety in diet, may be found to yield better results. As in health, so in disease, each man is a law to himself with regard to his diet. The personal equation should in all cases receive our careful consideration. If a diet rich in albuminoids offers the most favourable conditions in the fight against infections like tuberculosis, what about the prognosis of this plague when it invades communities that are purely vegetarian in their diet or can ill afford to order a sufficiency of nutritious food? After all, we come to realise that in facing the problem of infectious diseases, more may be done by bowls of pottage than by bottles of medicine!

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Original Articles.

* THE TREATMENT OF NÆVI BY FREEZING :
A Report of 300 Cases.

BY

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Late Research Scholar of the British Medical Association.*



UNTIL recently, the treatment of nævi and moles has been confined to excision, cauterisation and electrolysis, and the results have been fairly satisfactory. In the case of superficial plexiform nævi, any of those methods may be employed, and, in deeper angiomas, electrolysis with a bipolar needle is often successful. But, in most cases in children, an anæsthetic is necessary, and the resulting scar is often far from ideal. The treatment of such nævi by radium has proved a great step in advance and, were it not for the great expense, would have a still larger field of operation. A still greater improvement has been effected by the use of liquid air and solid carbon dioxide by means of which equally good, if not better results can be obtained far more quickly, certainly and cheaply. Where the nævus is superficial, a single application for a few seconds will effect a cure, and the resulting scar is so inconspicuous that it is difficult even to detect. The great majority of the cases which I have treated have been, naturally, children, many of them only a few weeks old, and in such patients the painlessness and rapidity of any method of treatment is of great importance. The application is of course cold, and a tiny baby will probably cry, but I doubt if it feels any pain, and older children will talk and laugh while they

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are having several *nævi*, warts or lupus nodules treated by this method. They say there is some feeling of burning or smarting while the tissues are thawing, but this very soon passes off. When a well marked, definitely raised and circumscribed angioma has to be treated, a single application is seldom sufficient, and I very much prefer to do too little at the first application rather than too much, especially if the buccal mucous membrane or an eyelid is involved. But even if several applications are necessary, it must be remembered that the inconvenience to the patient is very slight, no anæsthetic is necessary, and no dressings beyond some boracic powder or boracic ointment are required. For *nævi* on the face there is no question that this method is far preferable to any surgical operation, for *nævi* on the trunk it might be said that excision was equally good and that the scar does not matter, but I have seen a considerable number of such scars in which *nævoid* tissue has been left or has recurred and where either a further excision or treatment by solid carbon-dioxide was necessary.

I have successfully treated with dioxide 300 *nævi* of various extent and size. Most of these *nævi* were a source of disfigurement, many of them being on the face, but some of them were in positions where only a sentimental feeling on the part of the parents, and no cosmetic necessity, seemed to make their removal desirable. Such were *nævi* of the vulva, of the penis and of the margin of the anus, and they were interesting from the point of view of the possibility of sepsis, but I have not seen one in these positions which gave any trouble or failed to react in the ordinary way or heal up normally. Most of these cases were treated by me at the Queen's Hospital for Children, and included capillary, stellate, cavernous and pigmented *nævi*, some small and some several inches in diameter, flat or markedly raised above the adjacent healthy skin, forming prominent red or purple swellings. For all such cases treatment by solid carbon dioxide cannot be improved upon, but for large port-wine stains involving part or the whole of one side of the face, where a considerable area has to be treated at a single application, I prefer to employ liquid air. In the liquid state, air occupies $\frac{1}{800}$ part of its ordinary volume; in other words if liquid air be vaporised it will expand 800 times, and as the more volatile nitrogen evaporates the temperature rises and the almost colourless liquid assumes a bluish tinge—the colour of liquid oxygen—which remains until all the liquid has vaporised. Liquid air boils at 190° C., so its use is especially adapted to those cases where a maximum rapidity of action is necessary and the maximum degree of cold is required in the minimum time.

For a port-wine stain or large capillary *nævus* an application of 5 to 7 seconds is sufficient; for cavernous *nævi* 8 to 10 seconds. Its mode of action is very similar to that of solid carbon dioxide.

Carbon-dioxide has a critical temperature of $+31.3^{\circ}$ C., a boiling point of -78.2° C., when solid, and a melting point of -56.2° C. When solid, it can be moulded into pencils or sticks of various sizes and shapes, so as accurately to fit any small *nævus*; thus a lesion no bigger than a pin's head can be frozen and removed without the slightest involvement of healthy skin. *Nævi* of the size of a five-shilling piece can also be treated with a single application, and any lesion between these two sizes, however irregular in shape. For larger lesions, two or more applications, approximating but not overlapping, are necessary. The immediate effect of the application on the skin is to make it perfectly hard and white, depressed below the surrounding skin proportionately to the amount of pressure which has been applied. This pressure must not, where soft parts underlie the angioma, be greater than that required to press the blood out of the superficial vessels, and the surface of the skin must be held as tense as possible during the application; where bone immediately underlies the lesion, somewhat firmer pressure may be made, remembering that the depth frozen depends, other factors being the same, upon the amount of pressure applied. The duration of the application varies from 20 seconds for a superficial plexiform angioma to 40 seconds for a cavernous angioma, while warts, which are bad conductors of cold, require as much as 60 seconds. The time required for thawing is rather longer than that for freezing; the skin then feels firmer, due to secondary hyperæmia and extravasation of serum, and within an hour or two a vesicle forms. Unless the application has been extremely short, this vesicle does not become absorbed, and if not repeatedly punctured with aseptic precautions and drained it becomes infected. If possible, therefore, the fluid should be evacuated aseptically each time the vesicle or bulla fills up, and a pad of sterilised cotton wool is, under such circumstances, all the dressing required. When, however, such draining of the bulla cannot be carried out efficiently, a dressing of zinc ointment dusted over with zinc and starch powder should be ordered and the patient told not to remove the impetiginous-like crust which forms, but let it come away of itself. This takes place in about ten days and a delicate, smooth and supple cicatrix forms, which is at first pink, but later becomes paler and paler until it is almost invisible. The resulting scar may at first be slightly depressed below the surface of the surrounding skin, according to the nature of the lesion which has been treated and the extent of the freezing, but

the scar is finally of the same tint as the healthy skin, equally soft, and practically inconspicuous.

In the case of cavernous and pigmented hairy nævi and raised localised angiomata excellent results are also obtained, but more than one application is usually necessary, and the scar, although fine in texture and supple, is more conspicuous in proportion to the depth and extent of the original lesion and the number of applications made.

I have also applied this method of treatment with success to lupus vulgaris, lupus erythematosus, warts, rodent ulcer and old standing patches of psoriasis and lichen planus. The duration of the application varies in the different cases, but the cutaneous reaction is similar to that already described in the case of nævi.

The histological changes in skin which has been frozen with carbon-dioxide have been investigated by several observers and more particularly by Juliusberg. If normal skin is frozen and then immediately excised, sections of it show no pathological changes except thrombosis of the cutaneous vessels. If, however, normal skin is frozen hard for 30 seconds and excised 14 hours afterwards and hardened in 10 per cent formalin solution, sections show a similar thrombosis of the blood vessels, the thrombi being either hyaline, or composed of leucocytes, erythrocytes or both. Round the vessels is a well marked infiltration of leucocytes. The lymphatics are dilated and filled with coagulated, homogeneous masses. Such sections show, however, the most marked changes in the epithelial layer, the cells of which appear structureless and homogeneous, and the nuclei are clear and, with the exception of some nuclei of the basal layer, do not stain. It is well known that, at a temperature below 4 degrees C. water expands, and this expansion might, in the case of the epithelial cells, lead to rupture of the cell membrane and the katabolic appearances seen in the sections. Beneath the epithelium is found a layer of large polynuclear leucocytes, which also infiltrate the connective tissue, while the connective tissue cells are swollen and hypertrophied. The elastic fibres are unchanged, but, if the section is stained with Weigert's fibrin stain, the whole connective tissue layer is found to be full of fine strands of fibrin.

It has been conclusively proved that neither liquid air nor solid carbon-dioxide destroy the pathogenic properties nor inhibit the activity of micro-organisms and this must be remembered when treating lupus and rodent ulcer.

Various forms of apparatus have been devised for the manufacture of suitable crayons or sticks of solid carbon-dioxide, the essential being that the crayons shall be coherent, hard, of sufficient size and readily moulded or cut to the desired shape. The necessary hardness—the crayon should sink when thrown into water—can be obtained by compressing the snow in a mould by a heavy rod cut to fit the mould, or by a plunger with a screw thread which is screwed down on to the soft snow until it is of the consistence of ice. With such an apparatus the solid carbon-dioxide can be made nearly transparent and the point of the cone formed by a mould to any desired shape, it being possible to obtain a point so fine that it will freeze a nævus the size of a pin's head without affecting the adjacent healthy skin.

*NORMAL SALINE SOLUTION IN SURGICAL PRACTICE.

BY

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As I have on very many occasions treated wounds with normal saline solution, obtaining in each case very immediate and perfect results, I write this article with the hope that it may be of some benefit to the profession. Of course I should like to remark that I am aware of the fact that ordinary sterile water is as good an agent for cleansing wound, as the best known antiseptic lotion used; excluding in every case the possibility of bacterial infection, where some chemical to directly operate on the organisms of contamination is required; yet I must say the celerity and perfection with which one's good work is crowned with the use of Sal. Sol. is most marvellous and highly gratifying.

I consider it also of great advantage from its stimulating and nutritious value in the case of loss of blood, and whenever I have used it, I endeavour to cause as much as possible to be absorbed into the system through the wound. I have in all treated about a dozen cases or so by this means, but only here record two which were wounds of considerable dimensions, so as to specially illustrate my meaning of celerity and perfection in this treatment.

Case I.—On the afternoon of the 25th December 1910, G.R., male, aged 27 years, was brought to my hospital by a friend to have a "scratch on" his back dressed. This scratch, on examination, proved to be an incised wound 11½" long extending from 1" interval to the inner border of the

* Specially contributed to *The Antiseptic*.

right scapula on a level with the apex, to 1" above the level of the iliac crest, between the highest point of the right innominate posteriorly and the vertebral column. The top end of the wound was slight, a mere abrasion, but as it descended it became deeper, till finally at the lower end it entered the Latissimus Dorsi muscle to a depth of 2". The entire wound was gaping and the worst part was the bottom end 4" long and 2" deep. There was a very considerable amount of hæmorrhage, though no bleeding points sufficiently large to either clamp or ligature were visible. The history of the injury was a fall backwards on to a sharp bamboo stump sticking out of the ground. The patient was a big muscular man, who, according to his statement, had enjoyed perfect health since he could ever remember things.

I immediately plugged the wound with some cyanide gauze as a temporary measure, while I warmed to 100° F. some normal saline solution on my Primus stove, along with which was boiling a piece of ordinary antiseptic gauze. The wound was then thoroughly and slowly irrigated and washed with the solution thus warmed. Two deep sutures were applied into the Latissimus Dorsi muscle, and five superficial sutures into the rest of the wound. The wound was then plugged tight with the gauze that had been boiled in the solution through the opening between stitched. A pad of lint saturated with the solution was applied above; this was covered with a layer of cotton wool and a firm bandage applied over the lot. Patient was put to bed and ordered not to lie on his back for a few hours. Three hours after I inspected the wound and dressings and was pleased to find that all hæmorrhage had stopped. Patient said he was feeling comfortable, there was a very slight aching pain, but he felt much better than what he was three hours ago. A little more saline solution irrigation was slowly done without removing the plugging, and the dressings reapplied. This dressing was not removed till the third day, when I was pleased to find that primary union had taken place; the external appearance of the wound had a beautifully healthy character, and there was total absence of all inflammatory signs. The wound was again treated with an irrigation, slowly performed, of normal saline solution, but this time no plugging given when dressed with gauze and lint soaked in the warm solution. The superficial stitches were all removed this day, and the patient was allowed up, and the next day was discharged to attend hospital every third day. In all four dressings were applied, and during the whole course of treatment, patient had not in any way suffered the slightest inconvenience. He was discharged to do his duties on the

14th day though four days before this he had started to do light work I should like to mention that this wound when first seen was remarkably dirty, not only from the patient's clothes, but also from mud from the bamboo stump. Furthermore this bamboo stump was in a latrine which was being used daily. In spite of these facts I should like to specially mention that inflammation and suppuration were unknown in the case.

Case II.—B. C., male, European, aged 32, was injured on the 11th December 1910 by a large plank falling on his left foot. There was a lacerated wound on the instep, and a deep incised wound of the left great toe, the latter involving the metatarsophalangeal joint, the former exposing the second and third metatarsal bones. The skin all around was lacerated, and there was considerable bruising and very great hæmorrhage. Foot was soaked in "hot" Sal solution for half an hour.

Small strips of gauze dipped in boiling Sal. Sol. were wrung out, and packed into the wound.

2nd day:—The same treatment was adopted but only very slight packing done. There had been a little oozing during the night; there was considerable swelling on ecchymosis.

3rd day:—Only baths were given, the foot being submerged in warm Sal. Sol. for $\frac{1}{2}$ or $\frac{3}{4}$ hour at a time twice a day; during the interval a light gauze and lint dressing was applied.

5th day.—The entire wound looked healthy, swelling had considerably reduced; healthy granulation appeared all round.

10th day.—Patient was allowed to walk about. There was still a little inflammation about the great toe, and considerable tenderness felt on the ventral surface of the metatarsophalangeal joint. The wounds had quite healed.

18th day.—Patient was fit to do duty and was discharged, but allowed to wear a shoe for a week.

This case is of special interest as there was considerable damage near and around a joint. The wound was healthy, there was only a small amount of suppuration, so little in fact that it hardly deserves mention. Constitutional disturbance there was none, nor even did the patient suffer from depression, malaise or pain.

* THE CAUSES AND TREATMENT OF CHRONIC GONORRHOEA IN THE MALE.

BY

C. F. MARSHALL, M. SC., M D., F. R. C. S.

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I will now briefly review the chief methods of treatment which have been adopted for chronic gonorrhœal urethritis. I shall endeavour to show that the usual methods described in the text-books are far from satisfactory, and often overdone and that the most promising outlook for the treatment of chronic gonorrhœa and its complications lies in the direction of vaccine or serum therapy.

In dealing with chronic urethritis we must first of all distinguish between general superficial catarrh of the mucous membrane of the urethra and local foci of inflammation due to incarceration of gonococci. But, as already mentioned, there is reason to believe that the former condition is often due to the long continuance of injections, and in the great majority of cases it is with local foci of gonococci that we have to deal. These local foci occur chiefly in the urethral glands and follicles—the glands of the prostate, the glands of Littre and the lacunae of Morgagni.

(1) *Injection and Irrigation.*—It is obvious that injected fluids cannot reach gonococci hidden in the deeper layers of the urethra or in the glands mentioned above.

The action of local remedies is also hindered by the fact that the columnar epithelium of the normal urethra becomes changed by the gonorrhœal inflammation and is transformed by keratinisation into squamous epithelium. This transformation also affects the ducts of the urethral glands and still further protects the gonococci from the action of injected fluids. A method which attempts to get over this difficulty was introduced by Motz. This consists in the employment of injections of glycerine, protargol, hermophenyl and cocaine, which are retained in the urethra for upwards of an hour by occluding the meatus. The glycerine is said to soften the keratinised epithelium and to facilitate the penetration of the local medicaments, protargol and hermophenyl. Apart from the inconvenience of this method, it is open to the objection that it does not discriminate between the healthy and diseased parts of the urethra.

The continuance of injections and irrigations is not only of little use in cases of localised deep-seated urethritis, but, as Neisser has

* Specially contributed to *The Antiseptic*.

pointed out, it is apt to induce or maintain serous infiltration of the mucous membrane, which favours the growth of gonococci.

(2) *Instillation.*—In cases of chronic posterior urethritis the text-books advise us to instil a few drops of strong silver nitrate solution into the posterior urethra by means of a Guyon's or Ultzmann's syringe. Now, in cases of chronic posterior urethritis it is the glands of the prostate which are affected and which contain foci of gonococci securely entrenched below the surface of the urethra. How can we expect a few drops of silver nitrate solution placed on the surface of the mucous membrane to reach the lurking places of these microbes? Another objection to this method is that we cannot see what we are doing, and the silver nitrate may thus be applied to a healthy part of the urethra.

(3) *Dilatation by sounds.*—The passage of large metal sounds lubricated with some antiseptic ointment, such as protargol (10 per cent), may certainly be useful in cases of chronic gonorrhœal urethritis limited to the anterior portion of the urethra. Some authors recommend light massage of the urethra over the sound, to express the contents of the urethral glands or follicles in which gonococci are usually hidden.

In the case of posterior urethritis, however, the passage of ordinary sounds is futile, because the largest sound which can be passed through the female urethra is not large enough to dilate the bulbous and prostatic portions. Special instruments which can be dilated after they have been passed have been devised by Kollmann and Oberlander to overcome this difficulty; also combined dilators and irrigators, by means of which the posterior urethra can be dilated and irrigated at the same sitting.

The objection to all these instruments is that they may cause re-infection of the urethra by expressing gonococci from the glands in which they were localised. Moreover, unless very carefully manipulated, they may easily tear the urethral mucous membrane and thus open the door to general gonococcal invasion of the body, or gonococcal septicæmia. As the late Sir Henry Thompson wrote some time ago: "The introduction of an instrument is more or less an evil, never to be resorted to unless a greater evil be present, which its employment may possibly remedy."

(4) *Urethroscopic treatment.*—There are probably few instruments which have been more abused than the urethroscope. Like other new

instruments it has often been used as a hobby or as a surgical toy. On the other hand, when used rationally and with strict discrimination the urethroscope may certainly be of service in the treatment of some cases of chronic urethritis. It has the advantage of rendering the affected parts visible, and by its means we can apply silver nitrate, the electro-cautery or electrolysis to chronic inflamed patches in the anterior urethra or to the glands of Littre. It is difficult, however, to deal with the posterior urethra by means of this instrument.

The urethroscope should never be used in acute or recent cases of urethritis, and should never be passed an unnecessary number of times. It is, therefore, wise to use it only for simultaneous diagnosis and treatment, chiefly in cases where there is reason to suppose that the chronic foci of inflammation are situated in the anterior urethra.

The urethroscope is open to the same objection as the passage of sounds, viz., that it may cause reinfection of the urethra by expressing gonococci from their lurking places.

(5) *Massage of the prostate*.—This procedure has been much vaunted by some surgeons as a means of expressing gonococci from the deep glands of the prostate in cases of chronic prostatic gonorrhœa.

It is usually performed by the finger, but some use a special instrument devised for the purpose. After the contents of the prostatic glands have been expressed by massage, the whole urethra is irrigated with some antiseptic solution such as permanganate of potassium, or oxycyanide of mercury.

The same objection applies to massage of the prostate as to the passage of instruments, viz., the possibility of reinfection of healthy parts of the urethra by gonococci expressed from their hiding places. It is probable that gonococci may persist in the prostate for years and give rise to no symptoms. It is also possible that the gonococci, thus incarcerated, after a time lose their virulence or cease to be infectious.

The presence of gonococci hidden in the urethral glands, especially the glands of the prostate and the question whether such gonococci are infectious or not is of great importance with regard to *marriage*. In order to detect the presence of gonococci in the prostatic glands some authorities recommend what is called the method of "provocation" or bacteriotaxis. This consists in the instillation of a few drops of one per cent solution of silver nitrate into the prostatic urethra, followed after 24 or 48 hours by massage of the prostate. The patient then passes water and the expressed secretion is examined for gonococci.

This is a crude and unpleasant method and is open to the fallacy that even if gonococci are found they may not necessarily be infectious. In such cases the time which has elapsed since the original infection must be taken into consideration. In fact, we have to choose between two evils—the risk of setting up further mischief by stirring up gonococci, and the risk of leaving them alone to be stirred up after marriage and cause infection of the wife.

A more scientific means of detecting the presence, and also of determining the virulence, of hidden gonococci would appear to be a reaction obtained by injection of gonococcal vaccine, somewhat similar to the various tuberculin tests for tuberculosis which have been introduced by Von Pirquet and others. As we shall see when dealing with vaccine treatment there is evidence in favour of the value of such a gonococcal reaction.

Vaccine and Serum Treatment.—We now come to the treatment of gonorrhœa by means of vaccines and serums, and, as this appears to be the most rational and effective form of treatment, I will give a resumé of the most important work which has been done recently in this subject.

Vaccine treatment consists in the subcutaneous injection of dead gonococci to the number of several millions, obtained by sterilising cultures of the patient's own gonococci, when this is possible (autogenous vaccine), or cultures from other sources (stock vaccines). At first, large doses of 100 to 1,000 million cocci were given, but more recent practitioners employ smaller doses of 1 to 10 million. Eyre and Stewart, who have made an extensive trial of gonococcal vaccines, recommend doses of 1 or 2 million given at intervals of 3 to 5 days or doses of 5 to 10 million given at intervals of 5 to 10 days, in cases of chronic gonorrhœa and its complications. They consider that larger doses than this are dangerous. These observers also claim good results in the treatment of acute gonorrhœa. According to them, a stock vaccine comprising a dozen different strains of gonococci gives nearly as good results as an autogenous vaccine.

The gonococcal reaction.—This may be general or local. The general reaction is especially observed in cases of gonorrhœal arthritis, and consists in rise of temperature and increased pain and swelling of the joints. These symptoms appear 8 to 12 hours after the injection and usually last 24 hours. They are soon followed by improvement in the local conditions. The local reaction consists in tenderness with sometimes redness and œdema at the site of injection. It is absent in normal individuals, free from gonorrhœa.

With regard to the diagnostic value of the reaction, the observations made by E. E. Irons are of great interest. This observer found that the reaction was absent in eight control cases with no history or sign of gonorrhoea; these cases included pyorrhoea alveolaris with general joint infection, gout and rheumatism. He remarks that "the reliability of the clinical gonococcal reaction as a diagnostic measure will also be determined only after many tests. It has many points in common with the tuberculin reaction, and similarly, too, there may well be cases of gonococcal infection found which do not respond. It appears, however, to be well worth a trial. Should the reaction prove to be reliable, a valuable and much needed aid will be at hand for the diagnosis of obscure joint, synovial and periosteal diseases." We may add that the reaction, if reliable, would be a great improvement on the somewhat barbarous method of "provocation" in detecting the presence of gonococci in the prostate, in the case of candidates for matrimony.

The therapeutic value of the vaccine treatment has been shown in chronic gonorrhoea, more especially in cases of general gonococcal infection, including arthritis, iritis and orchitis.

In cases of *secondary infection*, where the gonococcus is no longer the chief infecting organism, treatment by gonococcal vaccine is naturally not so likely to succeed. In such cases the offending microbe must be determined, and the patient should be injected with a vaccine prepared from this microbe or a corresponding stock vaccine.

Serum treatment.—In 1904 Morlakoff used a serum obtained from rabbits immunised by intraperitoneal inoculation of cultures of gonococci, grown on pleuritic fluid, agar and glycerine. This serum was found to be of no benefit in acute cases, but was said to be useful in complications due to direct extension of gonococcal inflammation and also in cases of gonococcal arthritis, iritis, endocarditis, etc.

In 1907 Rogers and Torrey used a serum obtained from sheep immunised by intraperitoneal inoculation of gonococci grown on ascites-agar. The serum thus obtained was given in doses of 2 cc. on alternate days and was said to be of benefit in cases of gonorrhoeal arthritis, iritis and epididymitis. Cases of acute urethritis were not benefited, and cases of chronic urethritis did not yield readily to this treatment.

More striking results have been obtained, curiously enough, by injecting antistreptococcus serum in cases of gonorrhoeal complications, and the remarkable fact is stated that gonococci have been found to grow on a medium containing antigonococcic serum, but not on a similar medium containing antistreptococcus serum (Dowson).

The action of antistreptococcus serum in these cases is not in accordance with Erlich's theory of the opposition of a specific antibody to each infection, and is probably due to raising the power of resistance of the tissues.

Antistreptococcus serum.—A few years ago (1906) Porter Parkinson and Soltan Penwick reported two cases in which remarkable results were obtained from the rectal injection of polyvalent antistreptococcus serum. In the first case, a woman aged 39, the symptoms were those of pyæmia, but gonococci were found in the vaginal discharge. When the patient was in an apparently moribund condition three rectal injections of 10 cc. of antistreptococcus serum caused rapid improvement and ultimate recovery. In the second case, a girl aged 18, the symptoms suggested acute rheumatism, but did not yield to salicylates. Gonococci were found in the vaginal secretion. Rapid improvement took place after rectal injections of 10 cc. of antistreptococcus serum given daily for a fortnight.

Parkinson points out that these were not cases of secondary infection with other microbes as gonococci were found in each case in the pleural exudation, and in the second case in fluid obtained from the knee joint. These cases show that the serum has some effect in inhibiting the growth of the gonococcus or in neutralising its toxins. To test this point control experiments were made with simple enemata and rectal injections of antidiphtheritic serum and of normal horse serum. The results of these were all negative, and no improvement took place till the antistreptococcus serum was used. Antigonococcus serum also proved useless.

Parkinson also obtained good results from antistreptococcus serum in cases of gonorrhoeal arthritis, after other methods of treatment had failed. It is interesting to note that the vaginal or urethral discharge present in some of the cases ceased without local treatment.

The above cases were all in women, but Salter has described a case of recurrent, purulent, gonorrhoeal urethritis in a man which rapidly improved after three rectal injections of 10 cc. of polyvalent antistreptococcus serum on successive days. The purulent discharge ceased for two weeks, then recurred slightly, but was reduced to a slight mucoid discharge after three more injections at intervals of two days.

CONCLUSIONS.

1. Gonorrhoea in a healthy subject has a natural tendency to undergo spontaneous cure in the course of a few weeks, generally 6 to 8 weeks.

2. The causes which lead to gonorrhœa becoming chronic are constitutional states which lessen the power of resistance of the tissues to the gonococci. These constitutional states include tuberculosis, syphilis, gout, diabetes, and possibly malaria and chronic alcoholism.

3. The best prophylactic treatment of chronic gonorrhœa consists in thorough treatment of acute gonorrhœa at the earliest possible moment. This should be done in all cases, in spite of the natural tendency to spontaneous cure, for the presence of causes tending to chronicity are not always apparent.

4. When the constitutional states mentioned above are discovered they require appropriate treatment, so as to increase the powers of resistance of the tissues.

5. In cases occurring in syphilitic subjects, benefit may be obtained by mercury and iodides.

6. Instrumental treatment of chronic gonorrhœal urethritis is unsatisfactory and often overdone.

7. The most promising treatment of chronic gonorrhœa and its complications appears to be in the direction of vaccine treatment with dead gonococci or some form of serum treatment which increases the power of resistance. Mercurial plaster may be applied to the patch, except when it is inflamed, when starch poultices may be used.

Our Contemporaries. MEDICINE.

The Sterilising Action of Chloroform in the Living Organism.

In a recent number of the *Zeitschrift f. Immunitätsforschung* H. Conradi has described experiments which suggest a method of disinfecting typhoid carriers. He investigated the effect of lipid, solvent narcotics, especially chloroform, upon pathogenic organisms *in vivo*. By dissolving cell lipoids chloroform is able to penetrate both to bacteria and animal cells, and destroy the former, whether they be extra or intra-cellular. In consequence of its volatility chloroform is rapidly excreted from the tissues, which are therefore exposed to it only for a short time. Rabbits were given intravenous injections of a sublethal dose of typhoid bacilli freshly grown on agar culture. After 10 days all the rabbits were found to have typhoid bacilli in the liver, gall-bladder, heart, and bone-marrow. The kidneys, spleen, and urine were also frequently infected. At the end of the second week

the gall-bladder was the only organ in which the bacilli were invariably found. Now a half to one per cent. aqueous solution of chloroform rapidly kills typhoid bacilli *in vitro*. Chloroform was therefore administered once daily per rectum to the rabbits. The dosage was 5 cc. of a solution containing 5 parts of milk, 4 parts of cream, and 1 part of chloroform. The injection was followed in half an hour by transient narcosis. Within 10 days of the infection the bacilli had disappeared from 16 out of 21 rabbits treated, while 12 control rabbits not treated all had bacilli. Of 11 rabbits which had been given at least 5 doses of chloroform, none remained infected. Further experiments were made on rabbits in which typhoid bacilli lingered within the gall-bladder long after the intravenous injection. Twenty-four days after infection some of the contents of the gall-bladder were abstracted through an incision, and yielded cultures of typhoid bacilli. Five of these rabbits were given injections of chloroform and 3 were used as controls. Only in the controls could typhoid bacilli subsequently be discovered. The possibility of disinfecting human typhoid carriers is thus suggested.—*The Medical Review*.

Dyspepsia and Fats.

Recently the administration of fatty food has been advocated in cases of gastric trouble. Dr. Bassler reports four cases in the *New York Medical Journal*, in which the symptoms appeared to indicate this treatment with fats, but were only aggravated and intensified by it. The patients were all middle-aged, and they had been treated for some time for gastric disorders without improvement; but they rapidly got well as soon as they were put on a diet free from fat—skimmed milk, white of eggs, green vegetables, beef tea and carbohydrates, etc. They had not suffered from any previous stomach trouble. They now complained of acute pain in the epigastrium radiating through to the back. The pain was independent of food and very variable in regard to duration. There was no vomiting. Physical examination revealed no abnormal sign, even at the time of the pain. The first diagnosis was pyloric spasm, and, as already mentioned, the patients were given a fatty diet, with olive oil, which in no way relieved the condition. In one of these cases catheterism of the stomach was performed after a test meal, and about 900 cc. of bile-stained fluid withdrawn, with a considerable amount of fat floating on the top smelling strongly rancid. As the operation was carried out early in the morning, it was evident that the fat was derived from the food ingested on the previous day. A similar result followed catheterism of the stomach.

in a second case. In both cases considerable relief accompanied this treatment.—*The Hospital*.

New Methods of Collecting Tubercle Bacilli from Sputum.

Prof. F. Loeffler.—The demonstration of tubercle bacilli by cover-slip smear preparations is often difficult, especially if the bacilli are scanty or unevenly distributed in the sputum. Several methods have been devised to collect the bacilli present in a sample of sputum so that they are practically all present on the preparation eventually examined. In most of these the semi-solid muco-purulent sputum is diluted and liquefied. The mixture is then allowed to stand until the bacilli have settled at the bottom of a conical glass or is centrifugalized. Or some substance of less specific gravity than the mixture is added, by which, after shaking, the bacilli are carried to the surface. To liquefy tuberculous material no method is so satisfactory as the antiformin method of Uhlenhuth. Antiformin contains hypochloride of sodium and caustic soda. It readily liquefies tuberculous sputum, even when dilute and in a 25 per cent. solution still more rapidly, especially if the sputum and antiformin are boiled together. One volume of sputum is boiled in a beaker with one volume of 50 per cent. antiformin, until the former, however viscid, is liquefied. 15 minutes at most is required. The mixture is then centrifugalized for an hour. Some have advised, in order to shorten the period of centrifugalization, to dilute the solution of antiformin and sputum with water and spirit. But the greater the volume of the fluid the more difficult it becomes to obtain all the bacilli contained in it on a single cover slip. To overcome this difficulty Ellermann and Erlandsen digest the sputum during 24 hours at 37°C. with half its volume of 0.6 per cent. solution of soda. The digested sputum is then centrifugalized and the precipitate obtained is mixed with 4 volumes of a 0.25 per cent. solution of NaOH, boiled, and again centrifugalized. This "double" method gives excellent results, but requires time and is complicated.

Prof. Loeffler has devised a method ("chloroform method") which is simple, rapid, and reliable, the two chief reagents required being antiformin and chloroform. Five to 20 cc. of suspected sputum are placed in a glass beaker and an equal quantity of a 50 per cent. solution of antiformin (sold by Oscar Kuhn, Berlin) is added. The mixture is then boiled and almost immediately assumes a frothy brown appearance and becomes liquefied. To 10 cc. of this solution are added 1.5 cc. of a mixture of chloroform and alcohol (10 parts by volume of chloroform and 90 parts by volume of alcohol). This, after being well shaken in a

bottle with specially secure stopper, is centrifugalized for 15 minutes. By shaking, an emulsion of chloroform is obtained. Chloroform has a special affinity for the fatty and waxy bodies contained in tubercle bacilli, which become laden with chloroform and therefore, as the s. g. of chloroform is 1.489, of a higher specific gravity than the rest of the fluid, by centrifugalisation the heavy chloroform is rapidly driven to the end of the tube. Immediately above the chloroform the chloroform-containing material, which mainly consists of tubercle bacilli and is almost as heavy, collects and forms a distinct pellicle. After decanting the supernatant fluid this pellicle can be removed entire and placed on a slide. The excess of fluid is removed with blotting paper. A few drops of egg albumin (containing for purposes of preservation 0.55 per cent. of carbolic acid) are placed over the pellicle and a second slide is placed above the other. When the latter is removed a thin layer remains on each slide, which is left to dry in the air and afterwards fixed by being passed through a flame. The bacilli are stained in the usual way with boiling carbol-fuchsin, and decolorized with a 3 per cent. HCl-alcohol, malachite green being used for counter-staining. The whole procedure should not require more than 20 minutes.—*The Medical Review*.

Adrenalin Injections for Asthma.

THE almost magical effects which a hypodermic injection of adrenalin solution has over the paroxysms of true asthma in certain patients is by now fairly widely known. It succeeds sometimes where all other remedies fail, though, like other asthma remedies, it fails with some cases as completely and as unaccountably as it succeeds with others. The usual objection offered on hypothetical grounds to the treatment is that, should any patient become regularly addicted to it, serious danger to the heart and arteries might ensue. That this objection is not necessarily a valid or real one is shown by the history of a case of asthma published in the *Journal of the American Medical Association*. A medical man contracted whooping-cough, and during convalescence he began for the first time to suffer from bronchial asthma. All kinds of treatment were unavailing, including removal of polypi from the nose and other local treatment in that region. In little more than a year he became chronically and persistently asthmatic; slept sitting up, and seldom for more than a hour at a time. The eight minims of adrenalin solution were given hypodermically; the symptoms vanished in half a minute. For the next five years he continued regularly to take the drug, sometimes as many as forty to sixty doses in twenty-

four hours. After that, and without any change in treatment, environment, etc., he began to improve, and is now quite well; he has also regained 70 of the 84 lb. weight which he lost during the asthmatic period. The blood pressure is normal; and so are the urine, heart, lungs, retinal arteries, and every other organ. Adrenalin is now known to exert an influence on involuntary muscle fibres, and through its constricting action on the arterioles it probably does good in asthma by reducing the congestion in the bronchial mucosa.—*The Hospital*.

Prognosis in Diabetes.

For prognosis, diabetes may be divided into three groups:—
(1) Mild cases, which, under strict diet, no longer pass sugar after their meals; their symptoms disappear, they regain weight, and after a time the restriction in food may be withdrawn, and still they progress. (2) Bad cases, in which all carbohydrates, *i.e.*, sugar and starch, are withdrawn from the diet, and still they are found thirsty and wasting and weak, with sugar in the urine obtained from their nitrogenous diet. These patients are sure to die. (3) Intermediate cases, in which the sugar is got rid of by dieting, but as soon as the rules are relaxed and a greater variety of food given, the sugar reappears. In such cases the strict dietary must be reverted to for another month or so, and then relaxed again in the hope that the sugar will remain permanently absent.—*The Practitioner*.

Treatment of Biliary Colic.

During the attack opium or hypodermic of morphia and atropine should be given, and the following is a useful prescription for injection:—

R—Atropinæ Sulphatis	..	..	..	gr. ½.
Morphinæ Acetatis	..	..	..	gr. viij.
Sol. Ac. Carbol. (1 per cent.)			ad	3iv.

(mv. contain $\frac{1}{100}$ gr. of atropin. sulphat. and $\frac{1}{8}$ gr. of morphin acetat.)

Chloroform inhalations are useful in severe cases. Other drugs indicated are chloral, spiritus ætheris, antipyrin, and extractum belladonnæ. Of late years olive oil, in doses of at least 6 ounces, has been strongly recommended as causing rapid passage of the stone into the duodenum, but the experience of many does not support this. Hot water, with 1 drachm of sodium bicarbonate to the pint, may be tried. If the patient is put into a warm bath (100° F.) and kept there till he shows signs of weakness, an attack of pain may be warded off. Hot

turpentine stupes may give relief. Between the attacks the habits of the patient must be corrected. Wine, beer and sugar must be avoided. A prolonged course of alkalies, and sodium salicylate, or of such mineral waters as Vichy and Carlsbad, is advisable. Turpentine (mx.) in capsules, is said to aid the alkaline treatment. Surgical treatment is necessary whenever there is suppuration, when the gall-bladder remains distended, when the common duct is blocked, or when biliary colic frequently recurs.—*The Practitioner*.

Feeding in Delirium Tremens.

Liberal feeding is the key of the treatment in most cases of delirium tremens. Abundance of milk, beaten-up eggs, strong animal broths, jellies are excellent. A good beefsteak is also most valuable, provided the patient can be induced to eat it. If there is a very dirty tongue and total loss of appetite, it may be worth while to peptonize the food at first. In regard to drugs, bromides are too feeble to be of much service. Before deciding upon opium, it should be made quite clear that the kidneys are quite sound, as any suspicion in that direction absolutely forbids opium. If given at all give it early, and in a large dose, 40 drops of laudanum. To begin with 20 drops, then 30, then 40, as the days go on, is most dangerous practice. The largest dose is reached just when the patient is most exhausted, and as likely as not the morphia helps to settle his account. Most delirium tremens patients come for treatment practically starved. Free feeding is therefore essential. As long as the man's nutrition is not improved opiates will be in vain. Some prefer chloral to opium, and perhaps it is, on the whole, safer. But even with chloral there is considerable risk of depressing the heart.—*The Practitioner*.

Phenol in Herpes.

G. P. COOPERNAIL:—For the past 4 years the writer has treated herpes with an application of a 95 per cent. solution of phenol. As soon as the skin begins to turn white he neutralizes the phenol effect with alcohol. In many cases one application suffices, and in no case is it necessary to make more than 3. After one application of the 95 per cent. phenol he dresses the lesions with a simple ointment like zinc oxide. The pain, itching and burning are quickly relieved. The vesicles shrivel and dry up leaving a crust. The writer first used phenol in herpes progenitalis with such satisfactory results that he was led to try it for herpes zoster, in which it gave equally good results. Looking over the literature of

herpes I have not been able to find phenol mentioned in its treatment.—*The Medical Review.*

SURGERY.

The X-rays and Sexual Sterilisation.

A SHORT account of recent work regarding the action of x-rays on the female internal generative organs has appeared in *La Clinique* from the pen of Dr. Perdrizet. First noticed by Schonberg, the sterilising effects of the rays were confirmed by later observers. Gori has recently published results obtained in nine cases. He has employed the treatment to overcome the nervous phenomena so often met with at the time of the menopause, and his results are worthy of notice. In two cases application of the rays brought relief, but owing to irregularity in treatment cure was incomplete. In two others, aged respectively fifty-five and fifty-six years, from fifteen to eighteen sittings sufficed to bring about cessation of the menses and the disappearance of the nervous phenomena previously noted. These cures have now lasted over a year. His fifth case is still under observation. In four other cases the treatment was instituted because of severe metrorrhagia resulting from fibromyomata. The tumours disappeared after application of the rays. Bordier, of Lyons, has reported four cases of this last kind in which a cure resulted after a course of treatment extending over a number of weeks. The action of the rays takes place both on ovary and on the uterine neoplasm, so that premature menopause and atrophy of the tumour are met with together. Bordier states, however, that the internal secretion of the ovary is not done away with, and consequently the treatment has an importance all its own, especially in cases where the growths are of recent formation and small size. Offergeld goes even further, and states that sterilisation of the patient is necessary in many pathological conditions, and considers that radiotherapy, which in the hands of experts is perfectly safe, is preferable to the ordinary surgical methods in vogue to secure that result, such as removal of the Fallopian tubes, etc.—*The Hospital.*

Treatment of Colles's Fracture.

The method followed by Mr. Robert Jones, of Liverpool, in reducing a Colles's fracture, is as follows:—The surgeon with his left hand, palm upwards, grasps the patient's arm, the left, for instance, placing the tubercle of his own scaphoid against the projecting lower end of the upper fragment; he then places his right

hand, palm downwards, with the tuberosity of the scaphoid on the upper edge of the lower fragment, when, by a forcible pressure, the fragments are powerfully replaced in position and crepitus is often felt. If the reduction be complete the patient can at once move his fingers with less difficulty than before. In old cases of many weeks' standing, when deformity, marked disability, and sometimes pain exist, a Thomas's wrench is placed on the lower end of the radius and the deformity is reduced forcibly, usually without difficulty.—*The Practitioner.*

A Fishbone in the Superior Mesenteric Vein.

C. BENDA.—A man, aged 54, was admitted to hospital completely blind and almost stone deaf. The tongue was furred, the skin was jaundiced, and the liver was somewhat enlarged. The temperature fluctuated between 106.7 and 96.80. There was diarrhoea and the urine contained casts and albumen. The diagnosis of typhoid fever seemed doubtful as the spleen was normal and Widal's test was negative. A day before death cutaneous hæmorrhages appeared.

The necropsy showed that death was due to a purulent thrombophlebitis of the portal vein and its branches. The proximal end of the decomposing thrombus was 2 c.m. from the entrance of the vein into the liver, into the right lobe of which pus had tracked from the veins. The ileo-cæcal branch of the superior mesenteric vein was filled by a fairly recent, reddish-grey thrombus. In the main branch of this vein was found a flexible and transparent fish bone 2 c.m. long, the lower end of which pointed towards the intestine and was sharp, while the upper end was broad and rounded. As there were neither hæmorrhages nor necrosis of the intestine, the circulation must have been maintained through lateral anastomoses communicating with the splenic vein, which was healthy. No perforation of the stomach could be found, and as the bone was close to the intestine it probably had tracked direct from the intestine into the vein.

A similar case was reported by Max Koch, 2 years ago, in which the whole venous system was filled with septic thrombi, the disease running a very acute course. Another case was reported by Lamborn in 1841.—*The Medical Review.*

Autoserotherapy by Intravenous Injection.

AUTOSEROTHERAPY has been tried in France and elsewhere lately for pleural effusion, hydrocele, and ascites. Up to now the fluid injected has been small in amount, a few c. c. merely, and has been introduced

by the subcutaneous route into tissues in close proximity to the affected parts. Sicard and Galup at a recent meeting of the Société Médicale des Hôpitaux described another method of arriving at the same result. Instead of the subcutaneous they have made use of the intravenous route and instead of injecting a few c.c. of the serous fluid, have made use of massive injections varying from 300 to 500 c.c. at a time. So far they have only tried the new method on two cases of ascites resulting from simple atrophic cirrhosis. One case has recovered completely and the other has improved but is still under treatment. The curious point in their report is that five or six injections were needed before any marked improvement was noticed. These were repeated every ten to fourteen days into a vein of the arm. The cured case was under treatment for four months in all, and both patients had been subjected previously to repeated tapings, subcutaneous injections, diuretics, etc., without avail. The new method is said to be painless, safe and free from complications. The authors insist, however, that the fluid should be tested by injection into the guinea-pig so as to ascertain that it is free from bacilli before being used as an intervenous injection into the patient himself.—*The Hospital*.

The Action of Urinary Antiseptics.

DR. ANSON JORDAN contributes an interesting paper on the action of urinary antiseptics to the *Bio-Chemical Journal*. The drugs chosen for experiment were urotropine, sandal-wood oil, its derivative santalol-salicylate, and salicylic acid. The micro-organisms selected for the tests were putrefactive organisms, staphylococcus pyogenes aureus, and bacillus coli communis. The urine used in all tests was a twenty-four hours specimen collected from the same individual under similar conditions of diet and exercise. The acidity and alkalinity of the urine was varied by taking respectively acid sodium phosphate or potassium citrate by the mouth. It was found that the antiseptic power of urotropine in alkaline neutral urine is almost nil, but that the power rapidly rises as the acidity increased. Outside the body the antiseptic power of the drug is greatly increased by the addition of acid, but destroyed by that of alkali. In neutral solution urotropine disintegrates, yielding a small amount of formaldehyde (from 0.05 to 0.1 per cent.). No dissociation occurs in alkaline solution, but some 10 per cent. is converted into formaldehyde in acid solution. Sandal-wood oil was found to have a very feeble action against putrefaction, and the bacillus coli grew readily in urine containing the drug. It has a powerful antiseptic effect, however, as regards the staphylococcus, and in alkaline urine is more

efficient against this organism than is urotropine. If this selective action on the staphylococcus applies to cocci generally, it would account for the results obtained by sandal-wood oil in gonorrhœa. Santalol-salicylate has a feebler action than the oil, but can be tolerated in much larger quantities. Salicylic acid gives no appreciable increase of acidity in the twenty-four hours.—*The Hospital*.

Peroxide of Hydrogen for Lavage of the Bladder.

A. WEITH.—A man, aged 84, required the passage of a catheter on several occasions. After 3 weeks he suffered from a large boil on the wrist and an attack of acute cystitis. When the more acute symptoms subsided the bladder was washed out with boracic acid, at first in 3 per cent. solution, which was later increased to 5 per cent., and an occasional injection of a solution of nitrate of silver was given. In spite of this, much pus was present in the urine and micturition was frequent and somewhat painful, and prevented sleep. The writer regarded the boracic acid as insufficiently antiseptic to destroy any organisms in the urine, and determined to treat the bladder as an acute abscess by lavage with peroxide of hydrogen. He began with 200 c.c. of a solution containing 2 volumes of hydrogen peroxide. The patient felt only a sensation of warmth without pain and the liberated gas escaped freely from the urethra. The result was so satisfactory that it was possible to allow an interval of 3 days between the injections, though previously it had only been occasionally possible to omit the operation for a day. After 2 injections the strength of the solution was increased to 3 volumes and an injection once in 5 days and then in 8 days was sufficient, the urine at the end of this time being clear and odourless, and showed only a little thicker residue at the end of micturition. The patient rapidly recovered strength and appetite and could retain urine for 4 hours without inconvenience.

In a subsequent case in a man, aged 70, suffering from cystitis, 5 lavages at intervals of 5 or 6 days caused turbidity and odour of the urine to disappear. It is important to use freshly prepared peroxide of hydrogen, as when old the solution becomes acid and more caustic. The rapid and powerful action of the peroxide seem to indicate its use in these troublesome cases instead of boracic acid, the inefficiency of which is frequently observed.—*The Medical Review*.

Technic of Drainage of the Abdominal Cavity.

DR. FABRICIUS looks upon purulent peritonitis in much the same light as an abscess, and therefore urges wide incisions without suture of the wound

and irrigation of the abdominal cavity. He thinks it better to wipe out the pus with gauze compresses and to tampon the suppurating areas with large sterile gauze strips, which are left protruding from the abdominal wound. The external dressing consists of an abundance of sterilized cotton. Partial suture of the abdominal wound is done only in cases of tamponade for hæmorrhage. Even when draining through the vagina, suture of the peritoneum is omitted, as this was found to afford no reliable protection against infection. Longitudinal incision is preferred to the Pfannenstiel method in the presence of purulent processes. In serious cases of pelvic disease reliance is never placed upon vaginal drainage alone, but this is supplemented by tamponing the pelvic cavity with gauze strips, which are passed outward through the abdominal wound, which is left open. This method has been employed by the author since fourteen years with excellent results.—*The International Journal of Surgery.*

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Prolonged General Anæsthesia under Chloride of Ethyl.

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chief advantages of the operation. To avoid these inconveniences the writer devised the following operation which gives complete satisfaction.

An incision 7 or 8 cm. in length is made parallel to Poupart's ligament and two finger-breadths above it. After incising the skin and dividing the aponeurosis of the external oblique the fibres of the internal oblique and transversalis are separated. The peritoneum is then opened and the sigmoid flexure identified. The most prominent part of the sigmoid is emptied of its contents by pressure between the finger and thumb of each hand, and tied with catgut in two places about 2 cm. apart. The bowel is then divided between the ligatures, the cut ends being carefully cleansed and wrapped in sterile compresses. The essential stage of the operation is the division of the mesocolon opposite to the point of section of the bowel. This must be done so as to avoid injury to the vessels of the mesocolon. The ends of the bowel will now be found to be freely mobile and the upper or colic extremity should be sutured to the external angle of the wound while the rectal end is secured to the internal angle. Two rows of sutures are inserted so as to secure the bowel and constrict the orifice, that leading to the colon being narrowed till it allows the forefinger to pass with some difficulty, while in the lower segment an orifice of some mm. is all that is required. The intervening portion of the incision is closed by sutures. The result is an artificial anus with a double orifice separated by several cm. of skin surface and no cicatricial contraction can establish functional continuity of the bowel.

Several modifications of this operation have been proposed by various surgeons, all retaining the principle of the division of the mesocolon and the separation of the extremities of the bowel, but in the opinion of the writer they offer no advantage in compensation for the simplicity of the original method.—*The Medical Review*.

Auto-Serotherapy in Hydrocele.

BERTHOLON:—Following the success of auto-serotherapy in ascites and in pleurisy the writer has tried the method in hydrocele. In a middle-aged man who had a large hydrocele for 3 years he punctured the sac with a hypodermic syringe, and withdrew 2 cc. of fluid which he injected into the thigh. The patient refused to lie up but on the following day the sac had softened, and 2 days later had considerably diminished. The operation was repeated, and in 3 days the scrotum was normal, and after more than a month there was no recurrence. In a younger patient about 10 cc. of the fluid were allowed

to escape, and then 2 cc. were injected into the muscles of the thigh. In this case progress was more rapid, and the parts were normal on the fourth day. Further experience is required to confirm the constancy and permanence of these results, and to decide whether it is better to allow a proportion of the fluid to escape before making the injection or to simply withdraw the amount to be injected.—*The Medical Review*.

Recognition and Treatment of Acute Mastoiditis.

BY

GEORGE H. ROCKWELL, M. D.

SYRACUSE, N. Y.

In considering the acute inflammations of the middle ear it may be well to review briefly the anatomy of the parts to be considered.

The middle ear consists of the eustachian tube; the tympanic cavity and its contents, the ossicles and their adnexa; the mastoid antrum and cells.

The mucous membranes of these structures are continuous with and subject to the same changes that we find in the nasopharynx, and disease may invade these structures with comparative ease, once it has passed the isthmus of the eustachian tube. The isthmus is near the inner end of the tube and easily swells enough to close the tube and prevent drainage into the nasopharynx. This is the first lock against spontaneous resolution.

Nasal deformities decrease nasal resistance and ear resistance to infection. Adenoids are continually courting trouble for the ears by bathing the eustachian orifices in an infected mucus secretion and by mechanically blocking normal drainage from the middle ear.

The most important factors in the tympanic cavity are the mucous membrane and its closely connected periosteum—so closely connected as to be practically one structure.

The communication between the tympanic cavity and the mastoid antrum by way of the aditus, and the continuation of their lining membrane, explain the facility with which mastoid involvement occurs.

In the aditus we have a second lock against retrogression and when the mastoid is once actually invaded, spontaneous resolution is extremely difficult, if not impossible.

"It is perhaps true that some cases of uncomplicated inflammation of the mastoid cells do recover spontaneously; it must not be forgotten

that many lives have been sacrificed because the operation of opening the mastoid has been deferred too long."—(Bacon.)

"The mastoid antrum is the undisputed centre of distribution of infective material throughout the mastoid process"—(WHITING) and associated structures.

Caries and necrosis of the ossicles and bony walls is quite liable to occur from stagnation of the circulation through the muco-periosteum causing starvation of the bony structure. Either structure may be involved without the other or they may each be victims of the same process.

Caries is the usual cause of extension into the mastoid and is usually responsible for meningitis, extradural abscess, brain abscess, sinus thrombosis, cervical adenitis and pyæmia.

Peroxide of hydrogen when used in an ear which is exposed to infection by having a perforated M. T. may cause this class of extension with the complications enumerated.

Granulations or polypi in the middle ear are probably always due to carious bone though the particular carious spot may not be located.

Necrosis and caries may be so extensive as to involve a very large part of the temporal bone; or the temporal bone, especially the mastoid process, may be traversed by one or more fistulous tracts surrounded by apparently healthy live bone. This latter is known as the Bezold type.

Perforation either externally through the outer table or internally through the inner table into the cranial cavity is the result of nature's attempt to effect drainage of the parts. Therefore, it is problematical which of the two tables will give way first. Those of us who have worked our way through the dense structure of the mastoid cortex have little faith in nature's unaided efforts to properly treat mastoiditis acute. "Pathogenic germs are always found in the nose, mouth, nasopharynx and auditory canal."—(ROHRER.)

"Principally through the action of the ciliated epithelium in the eustachian tube the middle ear is normally free from germs."—(PREYSING.)

If the bactericidal power of the tubal mucous membrane becomes impaired by adenoids, nasal deformities such as spurs or deviations of the septum: hypertrophy, cysts, or polypoid degeneration of the turbinates; multiple nasal polypi; accessory sinus suppuration; foreign bodies with their attendant inflammatory changes; the exanthemata or other infections of the nasal mucous membrane; then the middle ear may readily become infected.

"With an intact M. T., infection from the auditory canal is improbable." (SMITH and POLITZER.)

By the introduction of foreign bodies such as ear spoons, hair pins, nails, etc., or by "boxing" the ears, or forcibly syringing the ears the M. T. may be injured or ruptured and the tympanic cavity infected. In mastoiditis the infection comes from the tympanic cavity in the great majority of cases. It is possible for infection to come and to extend by the blood and lymph streams and by metastasis.

"Congestion in the lining membrane to the point of starvation of the bone may cause death of the bone. Suppurative mastoiditis is of this kind."—(WHITING.)

The *usual* case of acute mastoiditis is easy of recognition, beginning with a "cold in the head" or a "sore throat" followed in a few days by earache which is quite extreme and prevents sleep. If no rupture of M. T. takes place, the ear drum will be bulging, pulsating, and reddened. If it is neglected and not properly incised to relieve congestion and give ample drainage the pathological process will very probably continue and extend, finally rupturing the M. T. and very possibly involving the mastoid antrum and cells.

It is at the stage of beginning acute otitis media that the greatest amount of good can come from prompt energetic treatment, by free catharsis and free incision of the M. T. followed by oft-repeated cleansing of the auditory canal. Simple treatment will not suffice after the mastoid is once involved. Tardy attention to the acute earache is quite liable to be followed by pain in the mastoid: pain of a deep boring character worse at night or when the head is lowered. This is the beginning of the mastoid involvement and calls for prompt treatment; free incision of M. T. and the inner post. Auditory canal wall; ice packs to the mastoid night and day; frequent irrigation of auditory canal and free catharsis. Such treatment may possibly bring about resolution if the process has not progressed to the point of suppuration or bone destruction.

If the bone is actually necrotic, even a very small area, there is no probability of resolution.

In the *average* case of acute mastoiditis, we find: Earache followed by a purulent discharge; bulging reddened, M. T.; possibly discharge has diminished or increased suddenly; persistent pain in mastoid which may radiate over side of head; sagging of the post. sup. auditory canal wall. Pain increased on pressure over antrum, tip, emissary vein, and pre-mastoid lamina. This tenderness is the most persistent symptom.

No pain in moving auricle. Blood count shows polynuclear count of 85 per cent. or over. Pulse slightly accelerated and temperature *slightly elevated*. When drainage is free there is little if any pain in the parts involved.

"Facial paralysis does not necessarily point to mastoiditis. It may occur in acute catarrhal or acute purulent otitis media."—(WHITING.)

After these symptoms have been present a variable length of time, then, depending on the virulence of the infection, resisting power of the patient, and upon the treatment employed, pain may rapidly subside and the patient feel very comfortable. At this time perforation of either the inner or outer tables has occurred; if the inner table has given way, subnormal temperature and a rather slow pulse are the rule; if the outer table has given way, temperature and pulse will probably be normal or slightly elevated. There will also appear with this latter condition an œdema and redness over the upper part or over the whole mastoid process. Later, fluctuation may be made out as the result of subperiosteal accumulation of pus.

"Fluctuation is an exceedingly tardy aid to diagnosis and usually implies neglect, or incompetence on the part of the medical adviser."—(WHITING.)

There may be perforation of both the inner and outer tables which accounts for fluctuation with slow pulse and subnormal temperature. Subnormal temperature with persistent mastoid tenderness in otitis media is a positive indication for the mastoid operation as it invariably indicates cerebral *irritation* at least.

There is no need of dwelling on the intracranial complications in connection with this paper.

"Recognition of the indications for operation and prompt action have reduced the mortality in mastoiditis to scarcely 1 per cent."—(WHITING.)

Acute mastoiditis needs to be differentiated from furunculosis of the auditory canal and is usually easily accomplished. Pain on moving auricle, inability or difficulty in introducing an ear speculum on account of the swelling of the auditory canal, pain in front of ear, pain increased on motion of the jaw, general disturbance slight, no pain on pressure over mastoid points. These are the cardinal points of diagnosis of furunculosis. Exostosis, narrowing or atresia of auditory canal, complicate the examination of the fundus and auditory canal, but should not interfere with a correct diagnosis.

Acute parotitis may have to be considered and differentiated from a far advanced, cortically perforated mastoiditis with cervical infection.

With the exception of the interpretation of pain over the mastoid points the findings in mastoiditis are objective; the diagnosis and treatment should correspond to the physical signs.

We have reported a case with typical mastoid *symptoms*, without a single *physical sign* of mastoiditis. This was a case of referred pain of *dental origin* and under proper dental treatment recovered rapidly. In babies and very young children the first sign of acute mastoiditis may be œdema over the mastoid. We have seen several of these cases and known of no condition which originates with œdema and fluctuation over the mastoid process. In these cases the "diagnosis" being self-evident the mastoid operation should be performed without delay.

Treatment.—This may be divided into two classes. Prophylactic and treatment after the disease has developed.

Prophylactic treatment consists of recognition and proper treatment of adenoids, nasal deformities and inflammatory conditions of the nose and throat as well as the recognition and treatment of the tubo-tympanic inflammations.

Earache is best treated by free catharsis, free incision of M. T. and warm irrigations of mild antiseptic such as saturated solution acid boric. "Hot compresses, poultices and fomentations tend to hasten performance of M. T. which is not desirable; they also tend to diffuse suppuration." (S. MAC CURN SMITH). Rupture should be anticipated by free incision. Baked onion hearts, laudanum and sweet oil are mentioned only to condemn.

In "chronic running ears" cleanliness is the first object to be accomplished. Warm saturated solution acid boric is very good for this. Peroxide of hydrogen is mentioned only to be condemned as a large number of mastoid inflammations are caused by this drug.

Carious bone and polypi should be removed and the ear given a chance to recover. While mastoiditis is developing we may accomplish much by renewing our efforts along the line of free drainage of the middle ear and by ice packs to the mastoid; after it has developed we have only operative measures on the mastoid to save our patients.

Mastoiditis occurring in the exanthemata or grippe is mastoiditis just the same and must be treated in the same way as though it were not a complication of such disease. It is the prompt and proper treatment of these cases that means success or failure.

and irrigation of the abdominal cavity. He thinks it better to wipe out the pus with gauze compresses and to tampon the suppurating areas with large sterile gauze strips, which are left protruding from the abdominal wound. The external dressing consists of an abundance of sterilized cotton. Partial suture of the abdominal wound is done only in cases of tamponade for hæmorrhage. Even when draining through the vagina, suture of the peritoneum is omitted, as this was found to afford no reliable protection against infection. Longitudinal incision is preferred to the Pfannenstiel method in the presence of purulent processes. In serious cases of pelvic disease reliance is never placed upon vaginal drainage alone, but this is supplemented by tamponing the pelvic cavity with gauze strips, which are passed outward through the abdominal wound, which is left open. This method has been employed by the author since fourteen years with excellent results.—*The International Journal of Surgery.*

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when astringents are used, and the characters of the motions are not masked as they are by the use of bismuth salts.

BILIOUSNESS.

Sodium salicylate is probably the most powerful of all the hepatic stimulants, forcing the liver to secrete more bile, rendering this more fluid, and assisting its absorption. These actions may explain its great value in relieving so called "bilious headache." The following, taken at the onset of the headache, generally gives rapid relief:—

Sodii Salicylat.	..	..	..	gr. x.
Potass. Bromidi	..	..	..	gr. xx.
Aq. Chlorof.	..	..	..	ad ℥i.
Every 4 hours.				

The cholagogue action of the drug probably explains its utility in relieving the constipation of gout, for once the bowels have been cleared by a mercurial purge, after constipation can usually be effectually checked by the occasional use of salicylate of sodium. In this connection should be mentioned the value of the drug as an eliminant of uric acid. Haig has shown that its administration quickly reduces the amount of uric acid in the blood and relieves the symptoms due to uric acid poisoning. At the same time the blood pressure is markedly lowered by the action of sodium salicylate, and this probably accounts for the speedy relief of headache depending on high blood-pressure.

PAIN.

The relief of the pains of rheumatic fever by salicylate of sodium is a common place, but the drug is most valuable as an analgesic in many other conditions. Thus the acute pains of the many forms of fibrositis are quickly relieved by the drug in combination with antipyrin:—

Phenazon.	..	..	..	gr. x.
Sodii Salicylat.	..	..	..	gr. x.
Tr. Nucis Vom.	..	..	..	mx,
Aq. Chlorof.	..	..	..	ad ℥i.

Every 4 hours.

The same prescription with the addition of 20 grains of bromide of potassium is usually effective in the headache of migraine, but, as with any remedy for that distressing disorder, it must be given at the very onset of the attack.

URINARY SYSTEM.

It is usually taught that salicylate of sodium is especially irritant to the kidneys and that its use is to be carefully avoided where nephritis is

suspected. When it is remembered in what huge doses, and for how long, the drug is given in rheumatic fever, and how rare it is to meet with nephritis in that disease, it is difficult to believe that there is any clinical evidence that the salt is obnoxious to the kidneys. On the contrary, its use has even been advocated in acute nephritis.

As to its value in inflammations of the lower urinary tract there can be no doubt. In the early stages of gonorrhœa and in cystitis it is one of the most efficient drugs in the Pharmacopœia. In gonorrhœa it should be combined with potassium bicarbonate.

MUMPS.

Probably no drug has any specific influence on this disease, but in cases attended by rise of temperature and severe pain, sodium salicylate is the most effective remedy. I have used it freely in two epidemics of mumps and have found it most valuable. Its excretion in the saliva, with its antiseptic action on the unknown bacteria of the disease, probably accounts for its action. It should be combined with an alkali as in:—

Sodii Salicylat.	..	..	..	gr. v.
Sodii Bicarb.	..	..	..	gr. v.
Saccharin	..	..	..	q.s.
Aquam	..	..	..	ad ℥ss.

Every 2 or 4 hours.

Such is an imperfect account of some uses of salicylate of sodium apart from its employment in rheumatic fever. There is a growing testimony to its value in some unmentioned disorders. Thus it has been used with good results in urticaria and several cases of Graves's disease have been much improved by it.—*The Practitioner*.

A Restorative Draught for Angina Pectoris.

Patients liable to anginal attacks should be directed to carry about with them a restorative draught containing some nitro-glycerine. A useful and convenient prescription is as follows:—

R. Sp. Ammon. Aromat.	..	..	..	℥i
Sod. Bicarb.	..	..	..	gr. x.
Tinct. Cardamom. Co.	..	..	..	℥i.
Sp. Chlorof.	..	..	..	mx.
Solutio. Nitro-Glycerini (1 per cent.)	..	..	..	mi.
Aquam	..	..	..	ad ℥ss.

The patients should be directed to sip the draught slowly directly they notice the commencing symptoms of an attack.—*Ibid*.

OPHTHALMOLOGY.

Treatment of Conjunctivitis.

BAILLIART points out that although conjunctivitis is the commonest of all eye affections it is necessary to be on guard against confusing together under this name all inflammations of the anterior segment of the eye. It is easy to do so, and may have serious consequences. Conjunctivitis is known by the appearance of an abnormal vascular net work, which makes the globe red; more or less pronounced secretion; and a feeling of having a foreign body lodged under the upper lid. It may be mistaken for keratitis, iritis, or glaucoma. It is always due to an infection. Putting aside some relatively rare forms, it may be said that the pathogenic agents of conjunctivitis are well known. These are—Week's bacillus, which causes acute conjunctivitis, very contagious and the most wide-spread form; the diplobacillus of Morax, which gives rise to sub-acute conjunctivitis, often chronic; the pneumococcus, which usually attacks the conjunctiva after coryza; and finally, the gonococcus, which causes extremely serious conjunctivitis.

All these forms are contagious and their treatment is, as a rule, simple. Washing out the eye and instillation of collyria are used conjointly. The washing can be carried out either with aseptic anodynes or with actual antiseptics. The chief collyria in use are:—Collyrium Zinc Sulph., $\frac{1}{2}$ or 1 per cent; Collyrium Argenti Nit., $\frac{1}{4}$ to 1 per cent., and exceptionally 2 per cent. The latter succeeds in all forms, but there are, however, some drawbacks which limit its use. In all forms, except the blenorrhagic, for which it is a real specific, it should be replaced by organic salts of silver, argyrol, collargol, protargol, albargin, &c. Baillart advises argyrol as best for use.

Summarized, the treatment of the chief forms of conjunctivitis is:—

Acute, cyanide lotion for washing, and instillations of argyrol or albargin, 5 per cent., three or four times a day.

Sub-acute, cyanide lotion for washing and instillations of zinc sulphate 1 per cent., twice a day.

Blenorrhagic, washing with permanganate, 1 in 5,000, and instillations of silver nitrate 1 per cent. or even brushing over the inner surface of the eyelids with this solution. Between these applications, two or three instillations of argyrol or of albargin.—*The Practitioner*.

Ophthalmoplegia after using Arsenobenzol ("Salvarsan," "606").

C. STERN.—The following is the third case of ophthalmoplegia seen by the writer since he has used arsenobenzol

A man acquired syphilis in Jan., 1909. He was treated with mercurial inunctions and, in June 1910, by injections. On Oct. 10, 1910, although Wassermann's reaction had proved negative, the writer, at the patient's request, injected 0.5 gm. of arsenobenzol in Wechsellmann's emulsion beneath the skin of the back. The local reaction was slight. Six weeks later the urine still contained arsenic. The patient felt well and gained weight. On Dec. 14 Wassermann's reaction was investigated with 3 separate extracts in every case with a negative result. On Dec. 17 there was diplopia. There was paresis of the left superior oblique and to a less extent of the left abducens. The right visual field was contracted for the colours red and green and the left field for green alone. This probably indicated changes in the optic nerve, chiefly the right. The patient corrected the diplopia as much as possible by keeping the head tilted towards the right shoulder.

Dr. Stern is convinced that this and his previous cases were due to the arsenobenzol and not to syphilis. Ocular paralysis in the earlier stages of syphilis is extremely rare. During the past 15 years he has seen at least 5,000 cases of syphilis, with at most 3 cases of ophthalmoplegia in the early stages. Possibly this result may partly be due to the energetic mercurial treatment. During the past 3 months he has seen 3 cases of ophthalmoplegia in 200 cases of syphilis treated with arsenobenzol (salvarsan). This sudden and great increase could scarcely be explained by coincidence, and the negative result of Wassermann's reaction in the last case excludes syphilis as a cause. The ocular complications, which have been observed by others, led Finger, of Vienna, to state that arsenobenzol was not at present suitable for clinical use. Probably the danger is less if administered intravenously, in which case it is rapidly excreted, than with the subcutaneous and intra-muscular methods. The latter have now been abandoned in the writer's clinic.—*The Medical Review*.

Arsenic compounds and Optic Atrophy.

Now that organic compounds of arsenic are being used in the treatment of many protozoal diseases, such as syphilis, malaria, recurrent

fever and the like, the possible risk attending their use must not be forgotten. Koch reported twenty-three cases of optic atrophy following the use of atoxyl in patients suffering from sleeping sickness. Schirmer records a case in a man of 58 after two injections of atoxyl a week for six months, the total amount given being 9.9 grammes. After the treatment had been persisted in for about two months the vision began to fail. Twelve months later he was totally blind. Similarly a man aged 73 suffering from psoriasis became totally blind about four months after six injections of arsacetin given in a period of four weeks. Both these cases occurred in diseases never known to produce optic atrophy. Another typical example is quoted by Coppez. A man of 54 with inherited syphilis, interstitial nephritis and cardiac lesions, received a series of ten injections of 5 centigrammes each of atoxyl. The sight began to fail after the first injection, and blindness was complete after the fifth; but this was looked upon as an indication for pushing the remedy. It was not until five weeks after the onset of the blindness that pallor of the discs became apparent. No recovery of vision occurred. The total number of such cases recorded approaches forty, or is even more. The clinical phenomena resemble quinine blindness, but in this latter partial recovery is the rule. Dimness of sight and flashes of light appear usually to be the earliest symptoms. At first there are no ophthalmoscopic changes, but almost invariably the visual fields are contracted.

Ehrlich's "606" appears to be free from the dangers attending the use of atoxyl. An epitome of the experience of Schanz, of Munich, suggests that it was of some use in five cases of interstitial keratitis. In one case of early syphilitic iritis one injection was followed by the disappearance of the inflammatory signs and giving way of the synechiæ. In one week after a single dose, and with the use of atropin, the eye had recovered. It has also proved of marked use in syphilitic papillitis. It is early to predict, but hitherto no case has been recorded in which "606" has been followed by serious damage to sight.—*The Bristol Medico-Chirurgical Journal*.

The Action of Astringents in Conjunctivitis.

Formerly the accepted theory was that astringents caused a superficial slough, and that this carried away the majority of the diseased cells. Later the "antiseptic" theory led to douching of the conjunctiva on the supposition that the drug acted directly on the microbes. Schneider concludes that there is no bactericidal substance in normal lachrymal or conjunctival secretion, but that the application of even 1 in 1,000 solution

of nitrate of silver causes the formation of "leukines" in the conjunctival secretions. The same result is produced by protargol and sulphate of zinc. After the instillation leucocytes pass into the conjunctival sac and give off leukines, and it is upon the production of leukines that the curative power of astringents depends.—*The Bristol Medico-Chirurgical Journal*.

OBSTETRICS AND GYNÆCOLOGY.

Three Bad Prognostic Signs in Eclampsia.

WILLIAM FLETCHER SHAW, M.D.—The writer draws attention to 3 bad prognostic signs in eclampsia—namely: (1) A small amount of albumin in the urine; (2) a high temperature; (3) *post partum* onset of symptoms. The first does not appear to be mentioned in the literature, and the second is mentioned only in Galabin and Blacker's midwifery. In a large number of cases of eclampsia, the writer was struck with the bad results in patients with these symptoms.

1. *Small Amount of Albumin in the Urine during the Eclamptic Stage*.—For the purposes of this investigation 10 grams of albumin per litre of urine is taken as a standard, any amount above that being considered large, anything below small; it seems a convenient one and gives a good cloud on boiling. Of 46 cases, 21 had a slight albuminuria, 18 a large degree, and in 7 cases it was not recorded. In the first class the mortality was 61.9 per cent.; in the second, 16.6 per cent. This enormous difference seems to show that we are dealing with two entirely different classes of cases.

2. *A High Temperature*.—100° has been adopted as the standard and only the readings noted which were taken during the eclamptic state, a high temperature during the puerperium, after the eclamptic period has passed, being necessarily of other origin. Of these 46 cases, 26 had a temperature of, or above, 100°, while 19 did not reach this temperature, and 1 was not recorded, as the patient died immediately after admission. In the first class the mortality was 57.7 per cent., in the second, 5.2 per cent. Several of the fatal cases had only a single rise during the eclamptic stage, but the majority had a progressive rise until death, and this sign warrants the gravest prognosis. When these two symptoms, a small amount of albumin and a high temperature, occur separately, they are, as shown, bad prognostic signs; but when they occur together they give the very worst prognosis, while without either the prognosis is extremely good. Of these 46 cases, 12 combined these two symptoms, while 7 had neither. In the first class the mortality was 100 per cent.; in the second it was 0.

3. *Convulsions Commencing after Labour.*—Very divergent opinions are held of the prognosis when convulsions commence only after labour. Recently Johnstone has collected statistics from many of the large clinics, with a varying mortality of 5.2 per cent. to 43 per cent. He points out that the earlier the onset the milder the attack. Of these 46 cases, in only 8 did the convulsions commence after labour, and of these recovery took place in only 1.—*The Medical Review.*

Extra-Uterine Gestation Evacuated per Rectum.

E. DARAIGNEZ.—Evacuation per rectum is a rare termination of extra-uterine pregnancy.

A woman, aged 37, had one child aged, 5. She was healthy, and menstruation was regular till Dec., 1907, when she had pain on the right side of the abdomen about MacBurney's point. The following month the menstrual period was delayed for 13 days and was otherwise normal, but was followed a week later by severe pain in the back lasting 3 days. On Feb. 15 she began to suffer pain in the lower abdomen and left hypochondrium. This was at first slight but rapidly increased, while the abdomen became distended and severe vomiting occurred. When seen on the following day the distension of the abdomen was such that palpation was impossible. The face was leaden, the eyes hollow, and the extremities cold. There was foetid diarrhoea and constant eructations. The pulse was 140 and the temperature 96°. During the following days the diarrhoea was replaced by constipation and difficult micturition.

The cervix was low, closed, and of normal consistence, but fixed in the middle of a firm mass which filled the fornices, especially dense to the left and posteriorly. Owing to abdominal distension bimanual examination was impossible. The same mass could be felt bulging into the rectum.

An apparently normal menstrual period occurred from Feb. 19 to 23 but did not relieve the pain and was followed by no discharge. In spite of treatment with opium, ergot, and hot saline injections she remained in this condition for 15 days, the temperature ranging from 96.4° to 97.6°. In the beginning of Mar. the distension of the abdomen began to diminish, the nausea ceased, and defecation and micturition became less difficult. At the same time the pulse improved and the temperature ranged from 98.2° to 98.6°. The fornices were still occupied by a firm mass which seemed prolonged into the left broad ligament. A hard rounded mass, larger than a foetal head, was felt on the left side, which seemed adherent to the uterus, giving the impression of a fibroid, had

not the delayed menstruation of Jan. suggested tubal gestation. This tumour continued to increase in size till Mar. 6, after which it began to diminish and rapidly became softer.

During Mar., Apr. and May menstruation was suppressed and the patient had occasional attacks of pain, with vomiting and abdominal distension. About May 15 the tumour was of the size of an orange and ceased to decrease in size, but a new tumour was felt and gradually enlarged. This tumour was continuous with the cervix, which was softened, but the fundus of the uterus could not be defined. By the end of May the tumour reached to 3 finger-breadths below the umbilicus, and what appeared to be parts of a foetus could be palpated, and a uterine souffle was heard, but the breasts were unchanged. On June 8 the patient was seized with pains as if in labour and gushes of a clear odourless liquid, with, at times, some blood, occurred. On the 10th these symptoms continued and the cervix was found to be softened and dilated, and smooth membranes could be felt in the uterus. The left fornix was filled with a mass of bony consistence which seemed to be separated from the finger by a thin layer of tissue. These signs and the secretion of milk in the breasts permitted a diagnosis of abortion.

On the following day the pains and discharge persisted, but the cervix had been pushed over to the right side by the hard tumour on the left which was evidently a foetal head. On auscultation a uterine souffle, but no cardiac sounds could be detected. During the following days the uterine contractions ceased but the situation was unchanged and nothing had been expelled. The diagnosis was ectopic gestation probably situated in the left tube, and the patient was sent to hospital on June 23, but operation was delayed by the presence of anasarca, and she returned home in the beginning of July.

On July 19 she began to suffer from intestinal colic with frequent stools of reddish offensive liquid. A rigor with a temperature of 100.6° and distension of the abdomen occurred. On July 26 the temperature fell, the evacuations by the bowel ceased, and the pelvic tumour diminished and became softer. The patient appeared almost well, when on the night of July 29 she was seized with severe pain and tenesmus. Rectal examination showed a foreign body which proved to be the lower limbs and part of the body of a macerated foetus of 3 or 4 months. On July 31 the cord presented at the anus but ruptured on an attempt at traction, the placenta and the remaining part of the foetus being retained.

She was again admitted to hospital in the beginning of Aug., when the foetal head was felt in the same position as a month previ-

ously. Laparotomy was performed on Aug. 4, when a thin walled cavity was found adherent to the parietal peritoneum in front, containing the head and trunk of a foetus of about 4 or 5 months. Posteriorly an aperture of 2 cm. in diameter communicated with the rectum. After cleansing the cavity it was freely drained through the abdominal wall and the rectum was washed out daily. Recovery followed and the patient was discharged on Sept. 25 with a small faecal fistula which closed 25 days later. Since then she has had no trouble from her pelvic organs.—*The Medical Review*.

The Treatment of Amenorrhœa.

In the amenorrhœa of young women permanganate of potash may restore menstruation after the lapse of two years or longer; sometimes it may restore the discharge within a few days, or the immediately succeeding period being missed, the one next may appear in due course, or it may take six weeks or even two months before the drug succeeds. This salt is useful also in cases of scanty, and perhaps delayed, menstrual flux, the interval varying from six weeks to two months. The permanganate in a case such as this brings on the period at its proper time, together with an increase in the flow. It is useful, also, when a chill prevents or delays the menstrual flow; thus, in the case of a woman who had prevented menstruation by taking a cold bath on the day when it should have appeared, the usual symptoms arising from arrest of the catamenia made their appearance: three doses of the permanganate having restored the flux, she discontinued the drug, whereupon the discharge ceased. She again returned to the medicine, and after another three doses the flow reappeared and progressed naturally. Permanganate of potash may be given daily until the catamenia appear and complete their course, when the salt should be discontinued; it should be recommenced four days before the access of the next period, and continued till the flow ceases. Permanganate of potash is useful in girls who, on leaving the country and coming to town, suffer from arrested menstruation; also in the amenorrhœa induced by sea sickness and in the case of women, between 30 and 40, generally married, who whilst rapidly increasing in weight suffer from a diminished menstruation. Permanganate of potash is given up to one, two, or more grains in pill-form thrice daily, after meals. Make the pills according to the following formula:—Permanganate of potash, gr. i; kaolin and petroleum cerate, in equal parts, q.s. Certain observers deny that the per-

manganate produces abortion, but some cases of abortion apparently due to the drug have been noted.—*The Practitioner*.

Fibroids and the Menopause.

If a patient has a fibroid too large to fit into the pelvis there is always a great danger that when the change comes it may diminish to such an extent that it may get into the pelvis, swell and become impacted. The true nature of many of these cases is overlooked, and they are apt to be regarded as cases of malignant disease. If impaction has actually occurred, the obvious line of treatment consists in pushing up of the mass, and taking means to prevent its return until it has shrunk to such a size that impaction is no longer possible. It is not always easy to relieve these cases at once. Nor in cases of long standing, if dense adhesions have formed, is it always possible. Failing immediate relief, the object should be to diminish the congestion, and then to make a further attempt at replacement. In order to do so, it is advisable to keep the patient at rest in bed with the hips raised; to keep the bowels frequently relieved by salines, and to give ergot. Then if, on examination, there is found any considerable difficulty in pushing the fibroid out of the pelvis, it is advisable to give an anæsthetic, under which replacement of the mass can be much more easily effected.—*The Practitioner*.

Some Mistakes in the Use of Obstetrical Forceps.

BY

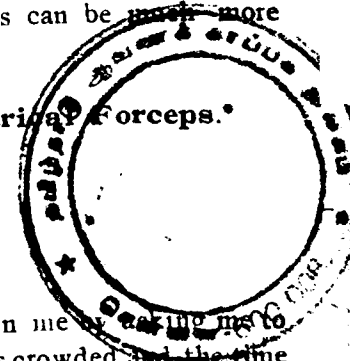
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Mr. President and Members of this Society,—

I thank you for the courtesy you have shown me by asking me to have a part in your program. As your program is crowded and the time allotted to each paper is short, I thought best to read a brief clinical paper.

About ten years ago without any special obstetrical experience except that gained in general practice, I was placed in charge of the obstetrical clinic, indoor and outdoor, at the Maryland Lying-In Hospital. This clinic takes care of about 500 to 600 cases yearly, the patients being both white and colored in the proportion of about seventy colored to thirty white. At that time, I had very definite ideas concerning obstetrical procedures including the use of forceps, but found very soon, that with a

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larger experience, I was compelled to change many notions which I had held finding that I had made many mistakes, some through thoughtlessness and some through ignorance, and as cases kept coming to the hospital after unsuccessful attempts at delivery with forceps by other men and others where the patient had been neglected and no attempt made to deliver them, and others where serious damage had been done by attempts to deliver with forceps when such mode of delivery was clearly contra-indicated, I began to realize that some other men were making the same mistakes that I had made and that the minds of many general practitioners were much confused concerning the frequency with which forceps should be applied, the indications for forceps delivery, the methods of application and delivery, and above all the contra-indications to the use of forceps.

To illustrate: A case would be brought in with contracted pelvis after being in labor forty-eight hours or more with history of two or three unsuccessful attempts to deliver with forceps. In addition to having a dead child in utero she would probably have lacerated cervix, vagina and perineum and the beginning of an infection. On several occasions women have come to the hospital with perineum torn entirely through with the tear extending up the rectal wall for one or more inches, child still undelivered—this condition caused by the slipping of the forceps. On several other occasions women have been seen with severe shock from ill-advised attempts at forceps delivery and child with fractured skull. On at least three or four occasions women have been brought to the hospital with ruptured uterus, the result of traction with forceps before the cervix was dilated sufficiently, or with severe hemorrhages from deep tears of cervix. Again cases in which the pelvic joints were injured by too vigorous traction in wrong direction and many cases where the woman was infected by repeated attempts to apply the forceps when the forceps were for various reasons contra-indicated.

You will say that these cases are not unique and that such cases can be seen in any obstetrical clinic with a fair number of cases. This is true, but I am not trying to bring you new doctrines but to emphasize mistakes, and not a single one of these mistakes should occur if the principles of the application of forceps and the methods of forceps delivery are known and applied and if the contra-indications to the use of forceps are also known and respected.

The first great mistake in the use of the forceps is that it is used too frequently. The only statistics available in this direction are, of course, the statistics from the large clinics and those run from 1½ per cent. up to 10 per cent. of forceps delivery. It is to be remembered that

a large clinic receives practically all the severe cases among the poorer class of people in its neighbourhood or at least receives a much larger proportion of operative cases than would occur in the private practice of any single practitioner.

In our own clinic last year I found that in 550 cases we had sixteen forceps deliveries or about 3 per cent. and when it is remembered that about 70 per cent. of our cases are negroes and recall the prevalence of rickets among them, the very unfortunate hygienic conditions in which they live, their proneness to all manner of deformities and disease, it will readily be seen that the proportion of operative deliveries must be much higher than among an equal number of whites, so that I feel that our percentage of forceps deliveries must, if proper judgment was used in the selection of cases, at least represent the maximum number of cases which should have forceps delivery.

Yet, I think, we all know men who are accustomed to deliver a much greater percentage of women with forceps than this and who boast of the fact, they never allow a woman to suffer very long. The reason that the majority of men use the forceps too frequently is that they are not clear as to the indications for its use.

The indications for the use of forceps are very clearly and correctly stated in text books about as follows: I am quoting from Edgar. "To be used whenever labor is to be quickly terminated, owing to the peril of mother or child provided that contra-indications are absent." This would include such conditions as eclampsia, placenta prævia, accidental hemorrhage, etc., always remembering the contra-indications. I imagine, however, that we will all agree that in the vast majority of cases, the forceps are used because of real or supposed exhaustion of mother and occasionally because of asphyxiation of the child.

Exhaustion of the mother.—This is, I believe, a much overworked term, made to cover a multitude of other conditions such as impatience of the mother, anxiety of friends, desire to save the patient pain and distress, over-anxiety on the part of the physician or a sleepy, tired or busy physician and some other conditions. Exhaustion ought to be easily and definitely determined by a careful physician. A pulse rate which gradually rises to 100 or more and continues to grow more rapid and weaker certainly suggests some exhaustion. If this be accompanied by a rise of temperature to 100 or more it becomes more positive and if these are accompanied by a refusal of the head to advance because of inefficient pains and especially of pains which are growing weaker rather than stronger with, possibly, beginning œdema about the four-

chette I think the diagnosis of exhaustion may be made with certainty and may usually be made safely before this degree of exhaustion is reached, but I certainly wish to insist that a woman is not exhausted simply because she refuses to bear pain any longer and demands relief, or because her family are excited and want the suspense ended, or because the patient has been in labor any number of hours. Exhaustion is a physical condition which may readily be determined by the physician and he is the only individual in the case who is qualified to decide whether the patient is exhausted or not and he should, under no circumstances, allow himself to be pushed into an operative interference against his own judgment. I doubt if there is a single physician here who has had considerable obstetrical experience who has not been called in consultation and requested to terminate by operative interference a perfectly normal labor probably one-half or two thirds advanced where all that was really needed was to control the patient and her friends until labor was terminated spontaneously. The average duration of labor in primiparous women is eighteen hours and in the absence of anæmia from exhausting illness, cardiac trouble, pneumonia or other complications exhaustion is seldom present before the expiration of this time. What conditions must be present before the forceps is applied? Of course, we all agree that the child must present properly and that the membranes must be ruptured; in addition to these *the cervix must be dilated*. This is a pre-requisite. It has been only a few months since I was called to a case and found that I was expected to deliver the woman at once with forceps. I suggested to the family physician that the patient was still in good condition, the child in good condition head beginning to engage, and that there seemed to be, as yet, no good reason for interference and that, any way, the cervix was not sufficiently dilated (it was about a little larger than a silver dollar). He was inclined to ridicule me and wanted to wager that he could get the forceps on through that much opening and went on to say that he had often applied the forceps through no larger opening. I believed him because I know from experience that this is not uncommon practice. Now we may wonder at this, but why should we when in many of the text books "dilatation" is given as one of the functions of the forceps. Williams, in his latest edition, gives six functions of the forceps of which dilatation is one, though, afterwards he discountenances this use of the forceps and pronounces it unjustifiable. Fortunately, the teaching in this regard is improving and most of the recent text books omit this function. Neither Edgar, Davis or Hirst even mention it. The application of the forceps to the head of the child with the cervix incompletely dilated

means in a great percentage of cases additional shock to the mother, severe injuries to the cervix or lower uterine segment and possibly severe hemorrhage from these injuries, or sub-involution or infection in the puerperium with years of invalidism as a possible late result. If it becomes imperative that the mother be delivered and if it be decided that the forceps is to be used then a partially dilated cervix must become a fully dilated cervix under manual dilatation and not dilated by the head propelled by forceps. To ignore this contra-indication to the use of the forceps is to make one of the most serious obstetrical mistakes. I have seen during the last year two deaths from hemorrhage resulting from tears due to application of forceps before full dilatation.

The head must be engaged.—If there is one opinion that is firmly fixed in my cranium it is that the forceps is not to be applied to the unengaged, or floating head. The reasons for this opinion are: First, it is practically impossible to apply the forceps properly to the head above the superior strait. That is, in an ideal application. Second, it usually kills the child. Third, it almost always injures the mother, sometimes very badly. Fourth, there is always some better thing to do.

Davis says: "If the head be not engaged and if it does not engage with good labor pains and judicious manipulation, the use of the forceps is absolutely forbidden."

Edgar says: "A head movable at the brim constitutes a contra-indication to the use of the forceps."

Yet, we all know of many cases where the forceps have been applied to the floating head to the detriment of both mother and child and the worst of it is that many, many times, this is done before the head has had a proper chance to engage, when, if the patient is let alone, she would deliver her child spontaneously.

Traction.—The last of what I consider the great forceps mistakes is: improper traction. Traction should be made in the right direction and with the exercise of very little force. Traction in the wrong direction is, of course, due to ignorance of the anatomy of the pelvis, especially of the birth canal.

My earliest introduction to operative obstetrics was to see a man weighing in the neighbourhood of 200 pounds, with his feet against the side of the bed pulling on a child with forceps with another man nearly as large helping him pull, with several people holding the patient on the bed. They were pulling on an unengaged head squarely against the symphysis pubis. The child was dead, the mother died the next day.

If the forceps is being used in the right case and if traction is being made in the right direction, very little force is necessary. If gentle traction in the right direction does not advance the head after a few trials, quit and think of some better thing to do.

I have named only a few of the mistakes which may be made in using the forceps. I have named those which I considered most important and serious. I wish to state my opinion that in the whole armamentarium of the medical profession there is no instrument which is used so unnecessarily and recklessly and with so much damage to the patient as the obstetrical forceps.—*The New York State Journal of Medicine.*

TOXICOLOGY.

Poisoning by Apioi.

GLAYARD.—A woman, aged 28, pregnant 2½ months, with the intention of producing abortion, took 10 capsules of apioi. A similar dose was taken in the morning and, as no result followed, 10 more on the evening of the following day; thus 6 gm. were taken within 48 hours. No symptoms were produced till soon after the third dose, when she began to suffer from severe vertigo which compelled her to lie down, and was soon followed by nausea and vomiting which continued all night. In the morning she observed that her face was red and swollen, the vertigo and vomiting persisted, and were accompanied by diarrhoea. At the same time a generalised eruption appeared, for which the writer was summoned, on the third day of the illness. He found an extensive urticarial eruption covering the face, neck and anterior surface of the chest and abdomen. It was also present on the inner and anterior surfaces of the thighs, legs and arms, but the extensor aspect of the limbs was but slightly affected. The face was red and swollen and the surfaces affected were very itchy. There was slight jaundice and the liver was large and tender. The urine was scanty and high coloured but without the presence of albumin. The vulva was the seat of considerable œdema, but absolutely no action was observed on the uterus and the progress of the pregnancy was unaffected. Under milk diet and a simple diuretic all the symptoms gradually disappeared in the course of a few days.—*The Medical Review.*

Tetany Following an Accidental Overdose of Thyroid Extract.

G. W. R. SKENE, M. D.—Tetany has developed within 2 to 5 days after parathyroidectomy. In some cases tetany has been noticed

some months after operations in the vicinity of the parathyroid glands. These observations have led some to attribute tetany to some functional defect in the parathyroids, either congenital or acquired. Forsyth believes that the thyroids and parathyroids are functionally the same, that the former produce colloid indistinguishable from thyroid colloid. Further, the suggestion has been made of trying thyroid extract in tetany, on the supposition that hypothyrea may exist. The following case, therefore, is of interest:

A girl, aged 3½, presented stigmata of cretinism. She was fat and plump, with reddish, somewhat cyanotic cheeks and abundant coarse hair. The anterior fontanelle was not closed. The hands and feet were cold and blue. The eyebrows were scanty. The abdomen was protuberant, but there was no umbilical hernia. There was marked lordosis, and the tibiae were curved. She was short in stature, and unable to say more than two or three words. Mentally, as well as physically, she was deficient and backward. The rectal temperature was 95°. Thyroid extract, 1 grain t.i.d. was given and the dose was gradually increased to 2½ grains t.i.d. All went well for a month, during which time she became more active and very mischievous. One morning she secured the box containing 5 tablets, each of 5 grains of the extract, and swallowed the whole. She "cried and screamed" a great deal that day. Six hours after she became "stiff and convulsed." A dose of castor oil was given, and later some bromide. There was no diarrhoea. The writer saw her the next day; she was stiff, and presented pronounced signs of tetany. The eyes and limbs "twitched" a good deal. The face was very red. The characteristic accoucheur's hand and arched feet, were typical. The fingers and wrists were swollen, and moving the joints made the child cry. The whole of each limb and the back were stiff and painful. The deep reflexes were increased. The pulse was very quick, and the child was feverish. She was unable to stand or sit without support.

The treatment was suspended for a fortnight, and the symptoms gradually disappeared. Then ½ grain of thyroid extract was given t.i.d., increased to 1 grain. During the week after resuming the drug the "accoucheur hand" was again noticed. The dose was again reduced but later increased. One month later a slight recurrence of the "accoucheur hand" compelled reduction of the dose of thyroid. Subsequently, though on continuous treatment, no recurrence of the tetany has been observed.

The first attack might well be ascribed to gastro-enteric irritation following ingestion of the tabloids, but the slight recurrence on the two

subsequent occasions shows that the tetany was due to hyperthyroidism.—*The Medical Review.*

A Method of Examining the Knee Jerk.

H. DE BRUN.—The examination of the knee jerk may be hindered by the difficulty of making the patient understand the necessity for the relaxation of the muscles of the lower limb, and also occasionally by his producing a voluntary movement at the moment when the tendon is percussed. It has been attempted to avoid these sources of error by distracting the attention of the patient by causing him to look at the ceiling, or pull his hands apart while his fingers are interlocked, but the writer has found it more simple in such cases study the effect on the muscle rather than the movement of the limb. In ordinary cases he proceeds in the usual way, which gives the most apparent indication of the reflex, but when difficulty is experienced from the causes mentioned above he examines as follows:—

When the patient is seated, it is not necessary for him to cross one leg over the other; he simply places the sole of the foot firmly and completely on the ground with the knee bent to a right angle. When in bed the sole rests on the bed, the leg being flexed on the thigh and the thigh on the pelvis. In both cases the foot is fixed so that at the moment of percussion of the tendon there is no movement of the leg. While the observer percusses the tendon with one hand he applies the other to the front of the thigh where the contraction of the quadriceps is felt as a swelling and hardening of the muscle, producing the sensation of a cylindrical body suddenly and temporarily distended, and transformed from relative softness to a wooden consistence. When the reflex is exaggerated the contraction may cause a visible shock to the body of the patient or a contraction of the extensors of the thigh on the opposite side. When the reflex is abolished the muscle remains flaccid, and the momentary swelling and hardening are completely absent. The writer has found this simple method a great saving of time when dealing with unintelligent or emotional patients.—*The Medical Review.*

Cases and Comments.

"Retching and Vomiting" as Prognosis of Plague.

BY

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In every disease we have some one symptom or a group of symptoms, from the mildness or the security of which the termination of the disease might be foretold.

In plague we have prominently the following symptoms:—(1) Fever. (2) Delirium. (3) Inflammation of one or more Lymphatic glands. (4) Retching and vomiting. The value of each of these symptoms in point of prognosis has to be discussed.

1. *Fever*:—The temperature of plague patients varies from 102° F. to 104° F. This cannot be a reliable symptom as patients with a temperature of 102° during the course of the disease have died, whereas those with a temperature of 104° have often times recovered.

2. *Delirium*:—This varies in degree in different patients from a slight wandering and incoherence to the most complete and thorough derangement of the mental faculties. Patients with complete loss of consciousness have been seen to recover whilst those with slight delirium have been carried off. Consequently much reliance cannot be placed on this symptom for gauging the result of the case.

3. *Inflamed glands*:—Patients with one femoral or inguinal gland slightly inflamed with but little pain in it were seen to die, whilst those with a number of glands well enlarged going through the tedious process of suppuration and granulation were observed to recover. Hence this symptom is not reliable in the foretelling of the result.

Anxious relations and others do often press the medical attendant for the prognosis of the case. He has to fall back on some symptom or other to form an opinion of the progress of the case.

4. *Retching and Vomiting*:—I have observed a symptom in most of the cases of plague I had occasion to watch, in which I have always placed much reliance for this purpose. It is "retching and vomiting." The severer these are in a patient the graver I have found the prognosis of the case and *vice versa*. Much importance is not attached to these symptoms for the reason that the patient gets exhausted for want of power of retaining nourishment, as patients who had eaten nothing for two or more days have recovered, whereas those who were carefully nourished from the commencement of the disease have succumbed. But much importance is attached to these symptoms for this reason, namely, that they are the signs of a serious brain disorder showing the amount of poisonous product in the blood and the degree to which important nerve centres are affected thereby. In support of the theory of absence or a slight degree of retching and vomiting as a hopeful sign of favourable termination of the disease, I would cite instances of persons developing plague after inoculation, in whom these symptoms are almost absent or very slight.

The opinion of those engaged in plague work on the value of these symptoms as prognosis of plague, is earnestly solicited.

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MAY, 1911.

The Independent Medical Profession in India.

N the May number of the *Indian Medical Gazette* we find the following illuminating comment in the editorial article:—
“It is known that the original scheme of the Secretary of State for developing an independent medical profession in India was found to be impracticable, but the Director-General never has lost sight of his interest in the independent profession in India.” It is, doubtless, consoling to find that the head of the Indian Medical Service takes such an interest in the development of the independent medical profession in this country. In fact, Surgeon-General Lukis said in the Imperial Legislative Council recently that his interest “in the improvement of the status of Indian medical practitioners is as keen as that of Mr. Gokhale on the equally important subject of primary education.” This is, undoubtedly, a valuable asset to the independent medical profession, so far as it goes; but, of course, it leaves untouched the question why Lord Morley's original scheme was found to be “impracticable.” There is a good deal of virtue in the word “impracticable.” It affords great scope for reserve and diplomacy. Probably the subordinate official position of the Editors of the *Indian Medical Gazette* forbids them to enter into an explanation of administrative policy, and the *Gazette* may not be the proper place for it. No such obstacles stood in the way of Surgeon-General Lukis when he delivered his speech in the Imperial Legislative Council; but after a perusal of it we are still left in the dark as to why Lord Morley's original scheme was abandoned. At the time when the late Secretary of State's scheme was first published, strong expressions of disapproval found their way into the Anglo-Indian press. One ground of disapproval was frankly based on racial prejudice. It was said that Anglo-Indians in the mofussil would condemn a scheme which made it possible for the sole competent medical man within their reach to be an

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Indian. There has been a strong feeling both among independent medical practitioners and the general public that the vested interests of the Indian Medical Service have stood in the way of the success of Lord Morley's original scheme, a feeling which has found unequivocal expression in the Indian press. It is idle to deny that vested interests have stood in the way of progress in various directions many a time in this country, and it needs an exceptionally strong man at the helm of affairs, or stronger countervailing influences to effect reforms whose urgency is clear as day-light. Considerable light is thrown on this point by the strong opposition to the appointment of Mr. Clarke to the Executive Council of the Viceroy and the reason why it was unavailing.

The lack of foresight and thoroughness in the policy of the Government is the reason why in medical as in other matters we are generally quarter of a century behindhand. When medical schools and colleges were opened in India it could fairly have been foreseen even by the average intellect that with the progress of education the demand for the scientific treatment of diseases would increase, to supply which the medical schools and colleges would be resorted to in increasing numbers. It was also plain that Indian students would seek greater and better educational facilities in medical institutions abroad and settle in India to practise their profession after the completion of their studies. It would have been plainly impossible, were it even desirable, to provide all these with Government appointments. The rise of the independent medical profession in India could have been easily foreseen and its needs anticipated. There would thus have been no grievance, no friction and, above all, no waste of good material. But according to the traditional British policy of “muddling through anyhow” matters were allowed to drift. Nothing was done, or rather attempted to be done, till the need for doing was made plain to the man in street for years. Even now there is to be, we are afraid, no thorough-going methodical reform, but a little timid tinkering attempted here and there. Things are not looked squarely in the face. Plain issues are evaded, as if matters could be solved in that way.

These considerations become plain when we turn to the speech of Surgeon-General Lukis in the Imperial Legislative Council in which he outlined a scheme of medical reform. The scheme is designed to meet certain disabilities of the independent medical practitioners in India, which, in the speaker's own words, “are not shared by their professional brethren in Western countries.”

These disabilities are three in number. Taking the last, first let us hear from Surgeon-General Lukis what it is and how he proposes to meet it. "The third disability," he says, "and this is one that we hear most about, is that medical practitioners are unable to obtain professorial and hospital appointments in the large Government Medical Colleges. This, I admit, is a very grave disability and one which has the serious consideration of Government." The admission that the disability is "very grave" is a point scored by the independent medical profession. But when we ask for the remedy we are only told that the Government is "seriously considering" it. One knows what "serious consideration" and "careful attention" on the part of Government usually means. More often than not it means that nothing will be done; sometimes, when the moment is propitious, that a little will be done later on but there won't be any hurry about it. In the present instance we are afraid that the former alternative holds good. Surgeon-General Lukis was careful to say at the outset that he wished it to be clearly understood that he ought not to be regarded in this respect "either as a mouthpiece of Government or as holding a brief for the Indian Medical Service." Very well. We, of course, take Surgeon-General Lukis at his word. But is it possible that the policy of the Government is entirely unaffected by the views held by its chief adviser in medical matters or that the official head of the Indian Medical Service holds totally different opinions from those of the rank and file? Surgeon-General Lukis does not say plainly what his views on this point are. But it is not difficult to gather what they are. He evades the issue but suggests a *non possumus*. He draws attention to what he calls "a most wise and statesmanlike speech" made by Dr. Temulji Nariman in Bombay—a postprandial speech by the way—some two years ago. The distilled wisdom of Dr. Nariman's speech is contained in the following passage:—"If Indians wish to bring into existence a profession of native doctors they should not hanker after one or two minor professorships in the Grant Medical College, but should, all unite and set to work to found a medical college of their own. . . . It may take years for its completion but let us make a beginning." Surgeon-General Lukis' speech on this point was but a commentary on this text. He advised independent medical practitioners to start unofficial medical colleges and schools working in friendly rivalry with Government institutions. Let the independent medical practitioners satisfy their hunger for teaching in those institutions which have yet to be started and which, for their completion on a par with existing Government colleges, will take, under the conditions obtaining or likely to obtain in this

country for some time, a quarter of a century on a modest computation. After this exhibition of diplomacy Surgeon-General Lukis asked for "the cordial co-operation of the public with the Government" in this connection! Doubtless we shall have unofficial medical colleges of our own, which in course of time will rival, and we hope some of them surpass, medical colleges run by the Government. But is this any reason why the professorships in the Government colleges should be a close preserve for the Indian Medical Service? In appointing men for professorships it is a sheer anomaly and an absurdity to act on any other principle than that of choosing the best men available, whether they belong or not to the Indian Medical Service. If the best man available belongs to the Indian Medical Service, by all means appoint him. And who can say nay to it? If he is to be found outside that charmed circle, is it an exaggeration to say that it is treason to the public service not to appoint him if he is willing to accept the post? And this plain issue Surgeon-General Lukis evades by suggesting that it is not good to hanker after professorships in Government medical colleges. Surgeon-General Lukis forgets that there are other and greater interests besides those of the independent medical profession, *viz.*, those of the public. Why should the students in the Government Medical Colleges have to put up with inferior teaching in a particular subject or group of subjects when better teaching can be had for the asking, and thus turn out of those institutions with lesser capacity of usefulness to the public than they need have? Why should vested interests stand in the way of improved medical teaching, for it can hardly be urged seriously that the I.M.S. men holding professorships in the Government colleges are in every instance superior to outsiders who may be willing to teach.

The other points dealt with in Surgeon-General Lukis' speech were two, *viz.* (1) the throwing open of the appointments of house-surgeon and house-physician in the large Presidency Government hospitals to the best students of each year, whether they propose or not to enter Government service, and (2) the starting of a School of Tropical Medicine in Calcutta which will afford facilities for post-graduate study and research work and be open to all properly qualified medical practitioners. The way in which these schemes will be worked will determine whether the reforms they will effect will be really worth the name or in the nature of mere tinkering. We shall wait and see.

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Original Articles.

*COLOUR BLINDNESS.

BY

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Part I.



COLOUR-BLINDNESS is a subject that should be regarded from a totally different standpoint to that of ordinary blindness; in other words it frequently exists, especially when congenital, without the slightest modification of the visual acuity. What is known as "the light sense" is one thing (by this tone, *i. e.*, light and shade or black grey and white, is discerned) and what is termed "the colour sense" is quite another. Colour-blindness is sometimes spoken of as "daltonism," since the English physicist, Dalton, was the first who accurately described it. Dalton himself was colour-blind, but this is no excuse for such a term. One cannot help thinking that nomenclature of this character is most objectionable and it is far better to keep to the descriptive term "colour blindness," which, although two words, does convey to our minds a meaning. Both the "ism" and the proper name are absolutely non-descriptive and to the uninitiated might even be mistake for some new religion. We find French authors constantly using the objectionable term, although it has not even the excuse of accuracy as Dalton was only red-blind. This impairment of the retinal function, colour-blindness, occurs under two principal forms—the congenital and the acquired. The former depends upon unknown causes and is really a lack of visual development; the latter is an important symptom not only of retinal and optic nerve diseases but also of brain and spinal affections.

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Congenital colour-blindness, the so-called "daltonism," varies in degree from total colour-blindness to merely a slight inability of discerning one or other colour. The total variety is exceedingly rare. In these individuals what artists call "tones" are discerned, but no tints, so that the whole world to such persons is black, white and grey, light and shade. There is a story told of Dalton who wore on public occasions his gown of Doctor of Science, quite unconscious of the fact that it was a brilliant scarlet believing it to be a sober green. He was a Quaker and he was wearing a garment altogether at variance with the asceticism of his religious faith.

On the other hand partial congenital colour-blindness is fairly common, more especially an inability for discerning the colour red. Sometimes it is simply an inability to distinguish from each other two colours of the same degree of brilliancy, *i.e.*, a weakness of the colour sense in one or another particular direction, so that, for example, there may be a hesitation, merely, which colour is to be called red and which green. These slight cases have to be carefully differentiated from that which is simply nothing more than "colour-ignorance."

A proper division, and consequently a correct understanding, of colour-blindness was not made until the latter half of the last century. Then Professor Helmholtz brought forward and elaborated a theory, long forgotten and originally suggested by Thomas Young in 1807 and now known in its final development as the "Young-Helmholtz theory of colour sense." According to this theory there is no colour of the spectrum into which any one primitive colour enters exclusively. The three primitive or fundamental colours are rather arbitrarily classed as red, green and violet, corresponding, supposedly, to three sets of colour-perceiving fibres or elements in the retina. Another authority, Maxwell, instead of violet gives it as blue. Helmholtz modified Young's original theory by suggesting that all colours excite the red, green and violet (or blue) elements at the same time but in varying degrees of intensity. He says:—"A reduction of colours to three base colours has only a subjective meaning; it is but reducing or carrying back the sensations to three base or final sensations. In this view Thomas Young grasped the problem, and in fact his theory gives us a very simple and clear idea and explanation of all the phenomena of the physiology of colour."

The Young-Helmholtz theory of colour sense can be graphically demonstrated and explained by drawing a figure of three curves rising up from a horizontal line or abscissa. Each curve is of equal height

and represents a colour. First the red curve rises to its height before the green curve and that again before the violet curve, all the three curves starting at the same time, so that between each curve and the abscissa there is a part of both the other curves, and a vertical line (ordinate) in each will show the amount of rising of each from the abscissa and thus the amount of each primitive colour. The red curve comes to its height first and shows the intensity of the colour merging into orange. This is the situation of greatest intensity of spectral orange, which of course gives chiefly the sensation of orange to a normal eye. Again spectral green further on to the right along the abscissa gives chiefly green as its normal sensation, and spectral violet (or blue) further to the right still gives chiefly violet (or blue) as its normal sensation. The intelligent reader may himself readily figure out this diagram from the above explanation, or he will find it in most of the larger text books on Ophthalmology. Thus it is graphically demonstrated that in each of the spectral colours a varying amount exists to the normal eye of the elements of the other colours. Spectral red, for instance, although it strongly stimulates the red perceptive elements, can stimulate in a low degree the green sensation shown by a part of the green vertical line, or ordinate, in the diagram, and also further along to the right, to a very slight extent, the violet. At its height along the curve, spectral red, because of this merging, thus gives not red as it was at starting but a sensation we call orange, and still further along the line to the right but not so far as the summit of the green curve we have the sensation of spectrum yellow. The theory is that the spectral colours really excite all three kinds of nerve fibres, that, it is maintained, have an existence in the retina, nerve fibres for pure red, pure green, and pure violet (or blue). Orange seems to bear much the same relation to red that blue does to violet and spectral yellow is the boundary colour between orange and green, the sensation yellow being produced because the nerve fibres of the retina are only moderately stimulated for the perception of red, still less for green and very feebly for violet.

Simple green stimulates strongly the green perceptive fibres, much less the other two; thus we have the sensation of spectral green.

Simple blue stimulates moderately the green and violet perceptive fibres, very feebly the red; sensation therefore is blue.

Simple violet stimulates strongly the violet perceptive fibres; feebly the other fibres, (very feebly the red ones); and thus the sensation is violet.

When there is equally strong sensation of all fibres there is the sensation of white or whitish colours.

It is maintained that objective homogenous light excites all these three kinds of fibres in varying degrees according to the wave lengths. The red perceptive fibres will be stimulated the strongest by light of the greatest wave length, the green perceptive fibres by light of medium wave length, and the violet by light of the smallest wave length.

Young's hypothesis cannot be said to be contrary to anatomical facts, because we actually know nothing either of the number or of the individual powers of the transmitting fibres. Whether it is a true hypothesis or not, it is a useful one to bear in mind. "It is only", says Helmholtz, "a more special carrying out of the law of the specific energies of the senses."

Let us suppose the red perceptive fibres to be absent (red blindness). This will be graphically represented in a figure of only two curves, the red curve being absent. In the same way in green blindness where the green perceptive fibres are lacking the diagram shows it by leaving out the green curve, and so on with violet blindness. The diagrams illustrate the theory very clearly.

Another theory is that of Hering's. This depends on an analysis of the sensations we have when looking at colours. The theory is, that there are four colours which each excite a single or so-called primary sensation, and these four primitive or primary colours are red, green, blue and yellow; all other colours excite in us a mixed sensation. The four primary colours form two pairs, one pair being red and green and the other yellow and blue. It is impossible for us really to conceive of a greenish red or of a bluish yellow; the colours are antagonistic, contrary to each other; they never can be perceived at the same time in the same colour. Artists' pigments of these two pairs of colours form grey or green, but these actual colours of the spectrum, when mixed in proper proportions, do not give to the eye any other sensation than white; they neutralize each other; consequently they are spoken of as complementary colours. Both white and coloured light, according to the theory, cause chemical changes in the retina; certain bodies called "visual substances" are supposed to exist in the retina, and to be acted upon by the light, either decomposed or regenerated, or as it is termed "dissimulated" or "assimilated." The brilliancy and concentration of the colour depends upon the relationship existing between its "value" and that of white. The primary colours besides the white value have only one colour value, but the mixed colours have two; thus to violet

there belongs a blue, red and a white value. The visual substances are of three kinds, the white-black, the red-green and the blue-yellow. The sensation of blackness caused by the absence of light is due to the assimilation or regeneration of the white-black visual substance. The two other substances, *i.e.*, the red-green visual substance and the blue-yellow are altered by that kind of light which possesses its corresponding colour value. Pure red, for instance, dissimilates the red-green visual substance and pure green causes its assimilation, so that we see red and green bear the same relationship to each other that white and black bear, and the same may be said of blue and yellow. Colour-blindness is, according to this theory, due to the absence of one or both of the coloured visual substances, the common variety being absence of the red-green substance, the other variety, *i.e.*, absence of the blue yellow substance, being exceedingly rare.

Another theory brought forward recently by Dr. Edridge-Green of London seems to be a great advancement on either of the others. It depends on the discovery of a substance in the retina called the visual purple. Dr. Edridge-Green explains his theory as follows: "A ray of light impinging on the retina liberates the visual purple from the rods and a photograph is formed. The rods are concerned only with the formation and distribution of the visual purple and not with the conveyance of light impulses to the brain. The decomposition of the visual purple by light chemically stimulates the ends of the cones and a visual impulse is set up which is conveyed through the optic nerve fibres to the brain. The character of the impulse set up differs according to the wave length of the light causing it. Therefore, in the impulse itself, we have the physiological basis of the sensation of light and in the quality of the impulse the physiological basis of the sensation of colour." The discovery of this visual purple as a substance photochemically sensitive to light in the rods of the retina seems to have revolutionised our ideas on colour vision. "This visual purple," says Edridge-Green, "is not found in the cones, but only in the rods. It was for this reason that it was considered to be not essential to vision because it was absent from the cones, and only cones are to be found in the fovea, the region of most distinct vision. The rods and cones project into a thin layer of fluid which is kept in its place by a membrane, the external limiting membrane. It occurred to me that the visual purple was diffused into this liquid, and on being decomposed by light, stimulated the cones, thereby setting up a nerve impulse which caused the sensation of vision."

Edridge-Green divides cases of colour-blindness into two separate and distinct classes, apart from the congenital and acquired; they are those that have loss of light perception as well as loss of colour perception, and those that only have some defect in the perception of colour, their perception of light being the same exactly as the normal-sighted. With congenital cases this second class are by far the commoner. The first class of cases he compares with those whose hearing is defective; they are unable to hear very high or very low notes, there being exactly analogous condition in the perception of sounds. The second class, purely colour-blind and nothing more, are like those who have a defective musical ear. He arranges individuals of this latter kind in a series, at one end of this series there being the totally colour-blind and at the other end the normal-sighted. The normal sighted, those able to see distinctly six colours in the spectrum, he designates hexachromic and the totally colour-blind monochromic. Between these the dichromic, trichromic, tetrachromic and pentachromic. One of his patients was colour-blind (dichromic) with one eye. For form vision this individual's colour-blind eye was much the better of the two, and he could recognise fine lines in the spectrum with this eye which were not visible to the other eye. His colour sensations of this eye were limited to the extreme red and the extreme violet at the two ends of the spectrum, all between being gray. "A theory of colour-vision," says Dr. Edridge-Green, "must account for a case of the kind and also for the other varieties and degrees of colour-blindness. The trichromic are a very important class, and any theory must account for the fact that they see yellow as "red-green" and blue as "violet-green."

For the testing of colour-blindness as well as for some interesting and instructive cases, mostly gleaned from literature on the subject, I must reserve a future paper.

(To be continued.)

• SYPHILIS.

BY

J. BERNARD DAWSON, M.B., B.S., F.R.C.S.

(Continued from page 204, Vol. VIII. No. 4.)

Congenital or Hereditary Syphilis possesses the great peculiarity of not manifesting a primary lesion, the first sign of the disease being the appearance of secondary lesions.

On the other hand the acquired form of the disease is initiated by the primary sore. Therefore it will be well now to consider the primary

• Specially contributed to *The Antiseptic*.

manifestations of the acquired disease and then consider the lesions of the secondary, intermediate and tertiary stages which are common to both varieties of the disease.

Theoretically the *treponema pallida* can enter the body through a lesion situated anywhere upon the skin and mucous membranes of the body; practically, for obvious reasons, the common sites of chancres are well defined. The primary syphilitic sore, no matter where found, presents the same characteristics. Thus it may appear in one of the following forms:—

1. *The desquamating papule* which may be a quite small, elevated spot, extremely irritable, dusky in colour and not ulcerated. It is hard and indurated, and usually covered with scales of epithelium.

If exposed to friction it is very apt to ulcerate and form an ordinary Hunterian chancre. If it remains free from ulceration it may escape notice so that the patient may become infected without knowledge and without any trace of the place of infection.

2. *The Hunterian chancre.*—This may be a development from the indurated papule as described above or may form in association with a soft chancre. It consists of an ulcer surrounded by a localized infiltration of the submucous or subcutaneous tissue which takes on an extraordinary induration and hardness. Microscopically the mass reveals an enormous number of round and spindle-shaped cells closely packed together and with little intervening connective tissue; the blood supply is scanty so that localized necrosis and ulceration are prone to occur. The neighbouring blood vessels may be inflamed and in a condition of endarteritis obliterans—a state of affairs which still more limits the supply of blood. Syphilitic chancres are usually single although simultaneous infection may occur in more than one place. Auto-inoculation is most unusual and a chancre on the prepuce does not infect the glans penis.

The macroscopic and microscopic appearances of chancres are usually modified by infection with pyogenic organisms. Associated with the primary syphilitic sore there is an enlargement of the lymphatic glands draining the site of infection. This adenitis is typical and consists of a hard indurated enlargement which leaves the glands freely movable and resembling little masses of cartilage. The adenitis, if purely syphilitic, has no tendency to suppurate and is quite painless. If the chancre has received a secondary infection with pyogenic organisms or is associated with a soft chancre, suppuration is not uncommon.

MODIFICATIONS OF THE PRIMARY CHANCER IN DIFFERENT PARTS OF THE BODY.

1. *The glans penis.*—A chancre in this position usually shows little elevation above the surface; the induration is widespread and diffused among the surrounding tissues; the surface is usually free from ulceration and takes on an appearance described by RICORD as parchment like.

2. *The base of the prepuce.*—In this position the chancre tends to grow transversely around the corona glandis produce a thick collar-like mass which can be rolled back *en bloc*.

3. *Chancres of the lip* invariably ulcerate and are peculiar for the enormous infiltration which takes place in the glands and connective tissue of the neck. The same can be said of chancres of the tongue and tonsil which are fortunately rare, especially in England.

4. *Digital chancres* may be unrecognised, especially if there is no ascertainable history of exposure to infection; glandular enlargement is not great, and the sore may be mistaken for a callous ulcer until the secondary symptoms occur.

5. *Meatal chancres* are not to be overlooked or the case mistaken for gonorrhœa. Stricture of the meatus may result from the scar tissue produced by healing of the chancre.

6. *Chancres in women* may appear upon the external aspect of the labia majora but most commonly upon the vaginal surface, upon the nymphæ or upon the os uteri; probably the last named situation is the commonest. Chancre in women is readily overlooked for three reasons:—

1. The reluctance of the patient to examination.
2. The existence of so many concealing folds.
3. The absence of marked induration.

THE CHANCROID OR SOFT CHANCER.

An ulcerative condition confined to the genital area and not syphilitic in character. Its peculiar characteristics are:—

1. The softness of its base and the absence of induration.
2. Its infectious nature especially its power of auto-infection, adjacent surfaces becoming infected with a typical sore.
3. Its short course, the ulcer, if treated by common antiseptic methods, healing in three weeks.
4. The frequency of suppuration in the associated lymph area.

It does not follow that because a sore bears all the above characteristics that the patient is not infected by syphilis. Double infection by the bacillus of Ducrey which produces the soft sore and by the treponema of syphilis may occur. Again syphilis may be inoculated after the first infection with Ducrey's bacillus. It is in such doubtful cases that the serum reaction of Wasserman is so useful, positive results being obtained in more than 80 per cent. of patients subsequently proved to be syphilitic.

There is another syphilis reaction which is to a certain extent reliable and can be applied more readily than Wasserman's. Justus discovered that the administration of mercury to a syphilitic patient causes a destruction of red corpuscles and therefore a fall in the amount of hæmoglobin. The test consists in estimating the hæmoglobin content of the patient's blood and then administering a single dose of mercury either as an injection, an inunction or as a fumigation. After 24 hours the hæmoglobin is again estimated and a drop of 10 to 15 per cent. will be noticed if the patient is syphilitic. The reaction occurs in all stages after the formation of the primary sore, as well as in hereditary syphilis. There are two points to be watched in the use of this test:—

1. In those whose hæmoglobin is already below the normal, the reaction may be positive in non-syphilitic cases.
2. The test is useless in those already under the influence of mercury.

THE SECONDARY MANIFESTATIONS OF ACQUIRED SYPHILIS.

1. *Constitutional Symptoms.*—The poison of the infection is now generally diffused throughout the body so that there is a condition of general malaise often associated with febrile disturbances. Severe headache due in part to the fever and in part to a specific inflammation of the occipito-frontalis muscles is often present. There is a well marked anæmia due partly to a diminution of the red corpuscle and partly to a decrease in the hæmoglobin content of each corpuscle.

The Cutaneous Symptoms:—The rash of secondary syphilis may assume the following forms:—

- (a) Roseolous syphilide in which the skin is simply in a state of hyperæmia which produces a dusky mottling.
- (b) A papular rash which may remain papular or pass on to the stages of vesiculation and pustulation giving rise to—
- (c) The vesicular syphilide, and
- (d) The pustular syphilide.

(e) The squamous syphilide in which there are patches of hyperæmia associated with infiltration and desquamation.

(f) The tubercular syphilide in which distinct nodules are produced in the skin which may ulcerate.

The rash exhibits the character of polymorphism; that is, several or all types of eruption may be present at the same time. The rash is widespread, affecting rather the flexor than the extensor surfaces of the body and but rarely being present on the face except at the roots of the hair when it is known as "the corona veneris."

The manifestations on the mucosa.—The mucous membranes are affected in a similar way to the skin, the difference in appearance being due to the moist nature of the surfaces.

The fauces become inflamed and congested, giving rise to the typical secondary sore throat. This may proceed to superficial ulceration, the ulcers being symmetrical and clearly defined. They usually start at the anterior pillars of the fauces and spread to the tonsils and along the soft palate, the last position being characteristic and of importance in diagnosis.

Similar ulceration may occur on the dorsum of the tongue and inside of the cheeks.

Mucous tubercles and condylomata may be found at the junctions of skin and mucous membrane, such as the lips, anal margin and vulva.

They are of the same nature as the inflamed throat, only accompanied by an actual enlargement of the skin papillæ and a hyperplasia of the epithelium which surmounts the inflamed area in a sodden mass. Both mucous tubercles and condylomata may proceed to ulceration, especially in localities exposed to friction.

Lymphatic phenomena.—During the second stage of syphilis the lymphatic glands throughout the body undergo an enlargement, being felt as round, hard swelling beneath the skin.

VARIOUS COMMON SYMPTOMS OF SECONDARY SYPHILIS.

1. The hair may become atrophic and fall out either generally or in patches producing the condition known as syphilitic alopecia.

2. Lightning pains in bones and joints.

3. Bilateral symmetrical chronic effusion may take place into the synovial membrane of joints.

4. Periosteal nodes may form on the long bones.

5. Iritis of a specific nature may occur.

(To be continued.)

EASY AND RELIABLE TESTS FOR SUGAR IN URINE.

COLLECTED BY

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This contribution was suggested by a very practical article published in *The Practitioner*, July, 1907. The number is devoted entirely to the study of diabetes from all points of view.

I shall quote useful and instructive passages for the benefit of the members who have had no opportunity to study them.

On page 124 of the journal, the author of the article, Dr. Walter G. Smith, M. D., says:—"The positive and conclusive tests for glucose in urine are two in number:—

"(1) The fermentation test with yeast (Dobson, 1779). This test reacts only with sugars containing C₆, C₉ or C₁₂ in their molecule. Pentoses are not directly fermentable."

"(2) The Phenyl-hydrazine test of E. Fisher. (1890). This test is extraordinarily delicate, and requires care in its manipulation. It reacts with 0.005 per cent. ($\frac{1}{4}$ grain per fluid ounce) of sugar, and it does not depend upon a reducing action. In order to identify a particular sugar, it is needful to determine the melting point of the yellow osazone crystals which are formed. Neither of these tests can be speedily carried out, and for this and other reasons they are scarcely suitable for country or general practice. In certain special cases of doubt or difficulty they may be indispensable, but I will not now dwell upon them.

"In diabetes, 0.2 per cent. of sugar can, with care, be detected by Trommer's test, and 0.025 per cent. by Fehling's solution, whereas urine, to which 0.4 or even 0.5 per cent. of sugar has been artificially added, may fail to give a characteristic precipitate with Trommer's test. (Tappeiner, *Chemical Methods of Clinical Diagnosis*, 1898. Translated by Dr. E. M'Weney. This little book contains the best short account I have seen of the rationale of sugar-testing.)

"Let us now consider the best methods of applying the two tests, which are simple and sufficient in almost all cases, if intelligently employed. I refer to:—(a) The copper tests (Trommer, 1841; Fehling, 1848). (b) The Bismuth test. (Bottger, 1857)."

I prefer to use two of these tests:—(1) *Fehling's test* and (2) *Bottger's test*. From the same journal I shall quote how best these tests are

• Specially contributed to *The Antiseptic*.

employed and other details. Fehling's solutions should generally be kept separate. Further, long keeping spoils them. To test if the solution is quite pure the following procedure should be adopted. "This is necessitated by the fact that Fehling's solution alters on keeping, with the result that on boiling it deposits a precipitate of cuprous oxide. The exact nature of the alteration is not fully understood. To test the Fehling's solution add to it an equal volume of water, and boil for 2 minutes. If the solution remains clear, it is to be regarded as safe. Should a precipitate occur, a little more caustic soda should be added and the liquid filtered. It is then ready for use." (*Hutchison and Rainy's Clinical Methods*).

To continue the article referred to above in *The Practitioner*, 1907:—
 "The neatest and the most accurate way of using it is as follows:—
 "In one test-tube boil about 3i of Fehling's solution. In a second test-tube boil 3ss to 3i of the urine. Let them cool for a moment. Then float carefully (preferably by a pipette) the urine on the surface of the copper solution. The production of a yellow or reddish precipitate indicates sugar, and is clearly seen against the blue back-ground of the copper solution. If the 'pellet' form of the test be used, the pellets should never be added directly to the urine, but should be completely dissolved in 3i of boiling water, and the urine floated on this solution as directed. It is worth noting that Fehling's solution will be effectively reduced by saccharine urine at ordinary temperatures, without heat being applied if sufficient time is allowed, i. e., some hours. The effect of heat is simply to quicken the *velocity* of the reaction. The term *velocity* in chemistry signifies rate of material transformation of a substance. If any doubt or difficulty arises as to the result of the copper test, I strongly advise recourse to the excellent and simple Bismuth test of Bottger (1857)."

I would add that in every case this latter test for sugar should also be applied for reasons which are quite apparent from what follows:—

"*Method*.—To a small quantity of the urine, diluted if of high specific gravity, add an excess of Liquor Potassæ. Then drop in a knife-pointful of Bismuth Sub-Nitrate, and boil at least one or two minutes. A black precipitate (= metallic bismuth, or a sub-oxide) falls to the bottom of the test-tube in presence of sugar.

"If the urine becomes dark brown upon being treated with alkali (Moore's test), dilute freely with water and let it stand.

"This is a simple and trustworthy confirmatory test for sugar and is free from some of the fallacies of the copper test, for it does not

"react with uric acid, creatinin, pyrocatechin, or hydroquinone. Albumen, if present beyond mere traces, must first be removed by boiling, acidifying, again boiling, and filtering.

"The reason is to avoid the possible formation of black sulphide of Bismuth B_2S_3 , due to interaction of alkali and the sulphur in the proteid, as explained under the Copper test. The Bismuth test is more delicate, if we use a solution known as Almens, or Nylander's solution which is an alkaline Tartarate solution of Bismuth, analogous to Fehling's solution. An excess of Bismuth Sub-Nitrate is to be avoided in Bottger's test, for a small amount of black precipitate, mixed with an excess of unaltered white Bismuth salt, will appear gray. Cascara, Rhubarb, and Senna in urine which may lead to coloration of the precipitate in the Bismuth test, are easily differentiated from sugar by simply floating a little Liquor Ammonia on the cold urine. A reddish ring appears at the junction, due to Chrysophanic Acid.

"An intelligent use of the Copper and Bismuth tests precludes the necessity for resorting to other tests, such as Picric Acid, Indigo or Safranin."

"*Nylander's (or Bottger's) reagent*.—Dissolve 10 grains of caustic soda in 100 c.c. of water, warm and add 4 grms. of Sodio-Potassium Tartarate and 2 grms. of Bismuth Sub-Nitrate. Shake thoroughly. A hydrated Oxide of Bismuth is formed which is kept in solution by the Tartarate. The solution should be filtered and kept in a tightly stoppered bottle in the dark." (*Hutchison & Rainy's Clinical Methods*).

I have quoted the above passages in full in the hope that medical men will commonly adopt the practice of applying these two tests for sugar in urine. One test is a check on the other, and both the tests applied to any urine very successfully removes any fallacies which may occur from adhering to one of the tests. Now the Fehling's test is the one universally employed in preference to any other test. It has its own fallacies as shown above. My readers will excuse me for thus intruding on their time and study by bringing forward and advocating an additional test for sugar in urine. Now a-days "Time is money." But this time I must say patience and care is money. I have adopted these two tests for sugar in the wards of the Native Infirmary and I find that this method has enhanced easily and cheaply the accuracy of detecting sugar in urine.

I sincerely hope that the medical profession would unanimously adopt the two tests and thus secure a ready and correct method of ascertaining, with certainty, the presence of sugar in the urine.

Our Contemporaries.

MEDICINE.

Rectal Feeding.

Although rectal feeding has been practised since the time of Galen its efficacy has not been established. At the outset its limitations must be recognised. It is impossible to nourish the body by means of suppositories, which probably cannot be absorbed at all. In some cases the rectum and colon have been found loaded with them at the necropsy. As the large intestine is the principal place for the absorption of water, it is essential for success with rectal feeding to take advantage of this fact by giving the nourishment in a fluid form. But even in this form its efficacy is open to doubt. The power of the large intestine to digest food stuffs is very slight. Whether undigested albumin can be absorbed at all is merely of theoretical interest; it is certainly absorbed in much too small an amount to be of any value. Erepsin is the only proteolytic ferment secreted by the intestine. It breaks down proteoses and peptones into simpler bodies prior to absorption, but can only act on caseinogen and fibrin among the native proteins. As erepsin ordinarily acts after pancreatic juice, we should naturally predigest the proteins by liquor pancreaticus before administering it per rectum. This has a further advantage over merely peptonising agents in digesting also carbohydrates and fats. Even when the rectal feed is completely pancreatised it is doubtful how far it can be absorbed. Though the large intestine absorbs water readily, food is normally absorbed as completely as it can be in the small intestine, principally by the highly specialised epithelium over the villi. There is no proof that the widely different epithelium of the large intestine can act in a similar manner. Yet the administration of small nutrient enemata is based on this assumption. It has been claimed that the larger enema will get through the ileo-cæcal valve and be absorbed in the small intestine. CHURCH noted in a case of duodenal fistula that some of the soap and water enema reappeared through the opening. Charcoal particles administered in an enema have been found in the stomach. But we cannot rely on this regurgitation as a regular event. BOYD has looked carefully for it by charcoal method without success. Moreover, only large enemata can be expected to reach as high, and the larger the enema the more difficult it is to retain. Let us turn from *a priori* considerations to actual results obtained.

Absorption of Proteins.—LEUBE, in 1872, stated that he had been able to maintain life for 6 months on a mixture of meat and pancreas,

both chopped very fine and injected by a syringe. Other observers adopting this method found it difficult to carry out and apt to lead to marked putrefactive changes. EWALD used eggs, flour, dextrose and red wine, the last ingredient being recommended because alcoholic solutions are sometimes absorbed when aqueous ones are not, and because of the astringent action of the red wine. According to some authorities the addition of salt is necessary for the absorption of protein. Recent observers have used almost exclusively some of the convenient solutions of peptones on the market. EDSALL and MILLER using milk and eggs with pancreatic extract found that from 40 to 47 per cent. were absorbed. HUBER found about 75 per cent. of peptonised eggs were absorbed, and BIAL, in experiments on himself, found an absorption of 50 to 66 per cent. of a solution of peptone. SHARKEY, using milk and powdered casein, found an absorption of from 50 to 75 per cent. Figures as high as these suggest that a comparatively large amount of nourishment can be obtained in this way. However, there is an important source of fallacy: they are based on the amount of protein recovered from the bowel on washing it out. But it is notoriously difficult to remove completely in this way the bowel contents. Even when daily irrigations have been given with scrupulous care, days afterwards a large amount of highly putrid material may be evacuated. Moreover, some of the protein which disappears may have been reduced by putrefactive changes into a form of no nutritive value.

BOYD found that even assuming that all the nitrogen which could not be recovered had been assimilated, nitrogenous equilibrium could not be obtained during rectal feeding, even in those accustomed to a diet poor in nitrogen. He drew the following conclusions. (1) Protein even when digested and with salt is poorly absorbed. (2) The albumin of eggs is an expensive and unsatisfactory food in rectal feeding. We may add that the great liability of eggs to putrefactive change adds much to the nursing difficulties, already great. (3) There is no relation between the amount of protein injected and the amount absorbed. Absorption seems to depend more on the individual capacity than on the amount given.

Absorption of Carbohydrates.—Normally carbohydrates are absorbed by the bowel as dextrose, and of all the foods this appears to be the best utilised in rectal alimentation. Using recovery methods DEUCHER found 77% absorbed, while ZEHMISCH got an absorption of 67.5%. The highest values were obtained by BOYD and ROBERTSON, who, in 2 out of 6 cases, found 100% to have been absorbed. It has been urged that here

again, bacterial decomposition accounts for much of the disappearance of the carbohydrate. BOYD found, however, that the B.Coli could account for the disappearance of only about 1%. But probably the lactic-acid-forming organisms would be responsible for more than this. That dextrose is definitely absorbed from the bowel is, however, proved by the following facts. REACH found that the respiratory quotient was raised by rectal feeds of dextrose—a sure sign that they were being utilised by the tissues. The acidosis of delayed chloroform poisoning or of inanition in œsophageal stricture, has been reduced or abolished by this procedure. Now, just as nothing induces acidosis so quickly as deprivation of carbohydrates, so nothing abolishes it so rapidly as their assimilation.

Absorption of Fats.—No emulsion, however fine, is absorbed in the absence of a fat-splitting ferment. This ferment is normally supplied by the pancreatic juice, and in its absence we have to depend upon bacterial decomposition. It is a simple matter to provide the ferment by liquor pancreaticus, but even then absorption may be very imperfect. In one of EDSALL'S and MILLER'S cases only 13.61 per cent. of the fat was absorbed. The fat in the yolk of egg is considered to be better absorbed than other forms of fat, but strong reasons have been given above against using eggs in rectal feeding.

MUNK and ROSENSTEIN made observations on a patient with a fistula of the thoracic duct. He was first put on a diet very poor in fat, and then enemata of fat and salt were given. In one experiment 3.7 per cent., and in another 5.5 per cent. was absorbed. They thought that the lower the melting point of the fat the better it was absorbed. DEUCHER concluded that no more than 10 gm. are absorbed daily, and this with difficulty even in favourable cases. BOYD takes a more favourable view. His best result was the absorption of 45 out of 103 gm. administered, and he thinks that fat is useful both directly and as a nitrogen sparer. But he employed the recovery method, which, as stated, is fallacious. The exceptional opportunities afforded by the case of fistula of the thoracic duct probably gives the most accurate results as to fat absorption by the rectum, and here the amount is very small.

Absorption of Salts and Water.—It is agreed that salts and water are freely absorbed from the large intestine, and the advantages claimed for rectal feeding are probably due to these ingredients. It is well-known that the body can stand deprivation of food for a considerable time if these are supplied. W. PASTEUR advocated the administration of

10 oz. enemata of plain water at a temperature of 100° F every four or six hours. He claimed that the results were at least as good as the ordinary nutrient enemata, while it is far simpler and pleasanter for the patient. SHARKEY has used $\frac{1}{2}$ pint of saline solution 4 times in 24 hours, and has been equally impressed with the advantages of this method.

LANGDON BROWN has compared the nitrogenous metabolism in patients on rectal salines and nutrient enemata. The nutrient enema which he employed was composed of 4 oz. of milk, 1-2 drachms of plasmon, 1-2 drachms of dextrose, 20 grains of bicarbonate of soda, 1 drachm of liquor pancreaticus and 5 minims of tinct. opii. The liquor pancreaticus was allowed to act for 20 minutes at 37° C., the opium being added just before administration to increase the tolerance of the bowel. The bicarbonate of soda was added to imitate the normal alkalinity of the pancreatic juice 1 per cent. This enema was given every 4 hours, the rectum being washed out every night and morning. The total food-stuffs thus given in the 24 hours amounts to:—proteins, 75 grams: carbohydrates, 75 grams: fats, 27 grams. This is clearly much less than the minimum required to keep the body in nitrogenous equilibrium, even supposing it were all absorbed, which is far from the case, while its caloric value is only 866.

Larger enemata, 1 pint of milk 3 times a day, though recommended by some authorities, are difficult in practice, patients usually failing to retain them after the first day or two. This would be equivalent to 66 grams of each of the 3 food-stuffs, and its caloric value would be 1188. The enema administered continuously, drop by drop, is also recommended, but sometimes causes the patient so much discomfort that it has to be abandoned. The enemata should be administered by a soft rubber catheter attached to the barrel of a 4-ounce glass syringe, the contents being allowed to flow in slowly by gravitation.

When no nitrogenous food is taken there is a steady fall of nitrogen in the urine till the output reaches 5 grams a day, or less. One of the first effects of giving nitrogenous food is a rise in the nitrogenous output in the urine, as the greater part of the urea is exogenous, *i.e.*, comes from the food. On the other hand, the purin bodies and the kreatinin remain constant, while the ammonia may rise a little to neutralise the abnormal acids produced. The nitrogenous output in the urine is a more accurate criterion of the absorption of nitrogenous material from the bowel than the loss of nitrogen from the rectal washings, because it is evidence of actual assimilation, and the sources of fallacy mentioned above are excluded.

LANGDON BROWN found that when only rectal salines are given there is a steady fall of urinary nitrogen. Starting with 10 to 11 grams the first day, it falls to about 5 grams by the 5th day, and usually remains at that point, though in some cases it fell as low as 3, or even 2 grams a day. If the volume of the urine varies considerably from day to day it is necessary to take the average of 3 day periods. Acetone usually appears by the end of the first 24 hours, and diacetic acid within the next 24 hours. On comparing this result with cases in which the standard enema was used, hardly any difference was detected in the nitrogen output. There was a steady fall in the total nitrogen down to 5 grams, and in one case as low as 4. The onset of acetonuria was, however, delayed as a rule, and it was usually less severe and of shorter duration. The great factor in the production of acetonuria is deprivation of carbohydrate, and as the enema contained both dextrose and lactose the disappearance of acetonuria indicated that some of these were absorbed. One crucial experiment was made. Salines were given till the nitrogen in the urine fell to 5 grams. The standard enemata was then given for two days, but the nitrogen output was hardly affected at all. The same amount of food was then given by the mouth, and the nitrogen output promptly rose.

In other cases the effect of adding 5 per cent. of dextrose to the salines was investigated. We may presume that complete evidence of its assimilation would be afforded by cessation of the acetonuria and a sudden drop in the nitrogen excretion, as the absorbed carbohydrate should spare the nitrogen waste of the tissues and also do away with the necessity of excreting some of the nitrogen as ammonia to neutralise the acidosis. In one such case the average nitrogen output on 3 successive days under rectal salines without dextrose was 11.68 gm., and on the next 3 days, with the addition of 5 per cent. of dextrose to the salines, it was 10.18, so that the result was not very striking. Both acetone and diacetic acid persisted in the urine so that the amount of dextrose absorbed could not have been very large. In another case the addition of 5 per cent. dextrose produced hardly any effect on the curve and acetonuria persisted; then food was given by the mouth. The nitrogen output began to rise again, diacetic acid promptly disappeared, and acid acetone vanished a day later.

It should be added that all the cases investigated, except one, were examples of recent hæmatemesis from gastric or duodenal ulcer. The remaining one was occlusion of the œsophagus from corrosive poisoning.

Practical Deductions.—These results go to show that if any protein food is absorbed from nutrient enemata the amount is so little as to make it hardly worth while to subject patients to so much discomfort for so small an advantage. A gain in weight has been claimed as evidence of their value, but this has been observed also on rectal salines. The addition of 5 per cent. of dextrose to the salines is probably an advantage as enough of it may be absorbed at any rate to check acidosis. Even in 5 per cent. solution it is apt to cause pain by the osmotic currents it sets up, and in higher concentrations this is almost certain to occur. BOYD concludes that the average caloric value of the absorbed food in his experiments was 389, *i.e.*, about $\frac{1}{3}$ of that on a normal diet, and his criterion of absorption was a rather lenient one. Moreover, in all his cases rectal feeding was well borne, for if it was not, other methods were adopted.

When one begins to doubt the efficacy of rectal feeding its disadvantages assume greater importance. These are (1) the thirst (this should be relieved by giving a rectal saline as well), (2) the difficulty in keeping the patient in a cleanly condition, (3) the secretion of gastric juice which it causes. UMBER found in a patient with a gastrostomy wound the injection of food per rectum was followed by the secretion of an acid gastric juice. It does not secure physiological rest to allow this juice to be poured over an ulcerated surface without having any food on which to act. To neutralise this juice the patient should be given bismuth lozenges to suck. This serves both to neutralise the acid and to form a protective covering to the ulcer. At the same time, by keeping the salivary glands active, it diminishes the chance of (4) parotitis which is due to an ascending infection of the salivary ducts. In this way it is much easier to keep the mouth clean. Incidentally the use of glycerine in a mouth wash for this or, indeed, in any other condition, is objectionable. The desiccation which follows only aggravates the state of the mouth. Plain hot water, to which a little potassium permanganate has been added, is much better. Ice is also objectionable; though pleasant at the time it aggravates thirst. (5) Persistent vomiting is an occasional complication in rectal feeding. If this starts it generally persists until mouth feeding is resumed. Unfortunately it is often regarded as a sign that the stomach cannot tolerate anything, which is not the case. It is probably due to the acidosis consequent on starvation. (6) The pronounced subnutrition induced by rectal feeding is very unfavourable to the healing of an ulcer in patients who are already in a poor physical condition consequent on one or more hæmorrhages, and may lead to serious inanition. Auto digestion goes on more rapidly in fasting

than in well-fed tissues, and this may lead to extension of the ulcer and recurrence of the hæmorrhage. It is useless to think of building up a patient by this method to a condition of improved nutrition prior to operation, for, say, an impermeable œsophageal or pyloric obstruction.

The aim of rectal feeding is to ensure physiological rest. This is an ideal often impossible of realisation. The heart must continue to beat, though the valves are studded with vegetations and the pericardium is a bag of pus. The lungs must continue their labours, though many of the alveoli are consolidated and the pleura is coated with lymph. The kidneys must continue to excrete, though their swollen tubules are engorged with blood. And though active ulceration may be proceeding in the stomach the patient must be fed. Rectal feeding is incapable of affecting this, and by favouring self-digestion may frustrate the very object in view. In the LENHARTZ method of immediate feeding with small and frequently repeated quantities of iced milk and beaten-up egg we have a safer, simpler and more effective treatment for gastric ulcer, which is free from any disagreeable features. If for any reason this is considered inadvisable rectal salines with 5 per cent. of dextrose may be used for a time. Between these two procedures it is doubtful if there is any place left to-day in therapeutics for the nutrient enema containing protein or fat.—*The Medical Review.*

When to Examine and What to Look For.*

BY

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GENTLEMEN,—I wish to make a few practical observations on the subject of the examination of patients presenting symptoms referable to the pelvic organs. In my book on "Gynæcological Diagnosis" I concluded with the following words, written as the result of deliberate conviction:—"The most expert and the most experienced must make mistakes in diagnosis; there is only one unpardonable sin, and that is to make a mistake as the result of careless or inadequate examination, or from having failed to make any examination at all." Now there are cases where the patient declines to allow an examination; I do not say that the medical attendant should stand on his dignity and loftily withdraw from attending the case, there is no true dignity in such a course. But he should make it clear that he will not hold himself responsible either for correct diagnosis or for proper treatment until he has been

* A lecture delivered at the Medical Graduates' College and Polyclinic.

given an opportunity of ascertaining the facts of the case. In the meantime his task will be to set himself to win the patients confidence, and he will soon find that she will be willing to do or submit to anything that he can show her to be necessary for her health. There are also certain conditions under which it is permissible, and even proper, to prescribe, without examination; and I shall endeavour to define what those conditions are.

Let me begin with a few general propositions.

Vulvar Swellings.—When any swelling in the region of the vulva is complained of, the vulva should be inspected, because it is impossible to guess what the swelling is; we may find such widely different conditions, as Bartholinian cyst, hernia, hydrocele of the canal of Nuck, urethral caruncle, condylomata or other venereal sores, cystocele, rectocele, procidentia, simple tumours of the vulva and carcinoma of the vulva.

Metrorrhagia.—When this is complained of, always make a vaginal examination, under an anæsthetic if necessary. Look for polypus, uterine fibroids, carcinoma of the cervix, vagina or vulva, retained products of conception, and extra-uterine pregnancy.

Abdominal Swelling.—Always examine the abdomen, look for pregnancy, fibroids, ovarian cysts, and hydroperitoneum, and bear in mind the possibility of abdominal tumours generally and simple enlargement of the abdomen due to fat or flatus.

I may remark that whilst patients may object to a vaginal or "internal" examination, the examination of the abdomen and breasts never hurts susceptibilities, and yet often gives valuable information. It may also give an indication as to whether a vaginal examination is necessary or desirable, or can be dispensed with.

Never make a diagnosis without first making an examination. Never suggest diagnostic possibilities except as a reason for making an examination, and even then it is better to make the symptoms and not the possibilities the reason for the examination. A wise reticence inspires more confidence than unsubstantiated conjectures.

When a careful examination still leaves the diagnosis doubtful, throw the responsibility on the state of medical knowledge by such a formula as "It is impossible to say": do not incur the charge of ignorance by saying "I do not know."

A rectal examination may give information as to pelvic tumours or displacements, but a vaginal examination is nearly always necessary to determine the cause of hæmorrhage. In making a rectal examination

do not be misled by the cervix; it normally projects quite prominently into the rectum and must not be mistaken for a displaced fundus.

Lastly, open inspection of the vulva is always better than digital fumbling.

Coming now to the more particular subject of these remarks, "when to examine and what to look for," we may consider it under three headings, according as we have to deal with unmarried girls, unmarried women, or married women.

(1) *Unmarried Girls (say under 20).*—If a girl complains of dysmenorrhœa, or of a recent or occasional increase in the monthly loss, it is proper to treat the case in the first instance without examination; suitable drugs and hygienic measures should be tried. If the dysmenorrhœa fails to respond to treatment and is incapacitating the patient, or if the monthly loss continues excessive and is producing anæmia, or if persistent pelvic pain is present, examination becomes necessary. The first step should be to make a rectal examination, looking for flexions and displacements of the uterus and tubal or ovarian enlargement.

If the rectal examination is negative and in any case if metrorrhagia is complained of, a vaginal examination must be made. Whenever possible this should be done under an anæsthetic, and it is well to be prepared to proceed at once to dilatation and curetting if necessary.

With primary amenorrhœa, if there are no symptoms the case should be left alone and no examination made. If the patient complains of periodic or abdominal swelling, look for malformations, especially atresia of the vaginal orifice with retained menses.

In the absence of symptoms it is desirable to make an examination if the patient is distressed or her friends are uneasy about the non-appearance of menstruation, or if marriage is contemplated. Under-development, pseudohermaphroditism, and other malformations are the things to look for; and the proper procedure is first to inspect the vulva; if this looks normal a rectal examination is made to determine the size of the uterus; and if this is not conclusive a vaginal examination is made, under anæsthesia if necessary, to determine the size of the uterus and ovaries.

When there is secondary amenorrhœa examination may or may not be called for. Thus, with a history of gradual diminution in the amount lost, and symptoms and signs of anæmia, phthisis, acromegaly, or other serious constitutional disorder, an examination is not necessary. On the other hand, when menstruation has ceased abruptly after going on much as usual, and the girl looks well and is not anæmic, an exami-

nation should be made; in the first instance the abdomen and breasts are examined, and if there are no signs of pregnancy further examination may be deferred. With positive signs a vaginal examination should be made, and this will be easy in such a case, as the hymen will almost certainly not be found intact. In cases of doubt always examine the abdomen.

The same remark applies to cases in which the complaint is of abdominal swelling; the three principal causes of abdominal swelling in young girls are pregnancy, ovarian cyst, and tuberculous peritonitis. If the abdominal examination is not conclusive inspect the vulva and test the hymen. When the complaint is of discharge from the privates the vulva should be inspected; the two conditions to look for are vulvovaginitis from some kind of non-sexual infection and gonorrhœal vaginitis. If the hymen is intact the former may be assumed; if it is torn the case is probably one of gonorrhœa. A culture of the pus should be made whenever possible in order to arrive at a positive diagnosis.

(2) *Unmarried Women.*—Most of the rules just laid down apply to the case of unmarried women, but there are additional reasons for examining and more things to look for.

Menorrhagia in unmarried women may be treated with drugs, without examination, for two or three months, but the medical attendant should always state at the outset that if the flow is not checked by drugs an examination will be necessary. When this turns out to be the case the two principal things to look for are uterine polypus and uterine fibroids; but the position of the uterus and the condition of the tubes must also be noted, since retroversion and pyosalpinx may both produce menorrhagia. With metrorrhagia there is only one rule for single and married, young and old, namely, "always make an examination at the earliest opportunity." In the class that we are considering metrorrhagia leads us to look for polypus and fibroids in women up to the age of the menopause; at and beyond that age we must look for carcinoma of the body of the uterus.

Persistent backache or bearing down pains necessitate examination; look for displacement and endometritis. Chronic pelvic pain associated with xanthorrhœa (yellow discharge) also necessitates examination; look for tubal disease.

In unmarried women the method of procedure should always be:—

(i) Examine the abdomen; if negative (ii) inspect the vulva; if the hymen is intact (iii) examine by the rectum; if this is inconclusive (iv) examine by the vagina, under anæsthesia if possible.

(3) *Married Women.*—When married women present symptoms pointing to trouble in the pelvis there is no reason to refrain from making

an examination; and the man who attempts to treat any such troubles without making an examination is courting disaster. I would make only this one exception, that slight pains in the pelvis, slight white discharge, and slight menorrhagia may be treated symptomatically in the first instance, examination being reserved for those cases in which there is not speedy improvement. It is always much better to make an examination and find nothing of note than to omit to do so when some organic disease is present. Moreover, the patient who is unreasonable enough to object to a necessary or a desirable examination, is not in the least likely to excuse her doctor if some important condition is discovered by someone else: she will be the first to say that he should have insisted that an examination was necessary.

Dyspareunia in the newly-married calls for examination, chiefly because the persistence of this trouble may lead to much domestic unhappiness. Look for malformations, rigid hymen, vaginitis and vaginismus.

When dyspareunia comes on later in married life, look for tubal and ovarian disease.

When a patient complains of sterility, three classes of case may be differentiated:—

Sterility with dysmenorrhœa: look for ante flexion, stenosis and under-development.

Sterility with xanthorrhœa: look for pus-tubes and pelvic inflammation.

Sterility with menorrhagia: look for fibroids.

We might add a fourth category, and say:—

Sterility with normal pelvic organs: look for impotence in the man.

When a married woman complains of persistent pelvic pain, the principal things to look for are tubal disease, tubal pregnancy, impacted tumours, displacements, and carcinoma. A diagnosis of "ovaritis," or to use the more correct term, "oophoritis", should never be based merely on the existence of pelvic pain or tenderness: it should be reserved for those cases in which an ovary presents very marked tenderness on bimanual manipulation.

True oophoritis is nearly always associated with tubal inflammation.

At the risk of repetition I must say that irregular hæmorrhage always calls for early examination: look out especially for fibroids and carcinoma of the cervix: in a younger married woman look out for missed or threatened abortion and for extra-uterine pregnancy.

When a woman gives a history of an early miscarriage and no foetus has been seen, look out for extra-uterine pregnancy.

Never treat hæmorrhage at the time of the menopause without examination.

With reference to examinations in connection with pregnancy, I will submit the following observations:—

When a married woman states that she has missed some periods, never assume that she is pregnant; and if she has not missed any periods never assume that she is not pregnant. Always examine before expressing any opinion.

Generally speaking, five examinations are advisable in connection with pregnancy, labour and the puerperium:—

(i) Examine early in pregnancy, to make sure that the patient is really pregnant; and, in the case of a primipara, to ascertain the proportions of the pelvis.

(ii) Examine about mid-term to see if the pregnancy is normal: it may be complicated by the presence of tumours.

(iii) Examine in the last month, to ascertain whether the presentation is normal and whether the head is likely to engage. A faulty presentation can be corrected beforehand by external version.

(iv) Examine at the conclusion of labour, to see if there are any tears or other abnormal conditions.

(v) Examine a fortnight after labour to see if the uterus is in normal position and has involuted satisfactorily.

The first examination will prevent the fiasco of a patient waiting on for a confinement that will never come off, because she has never been pregnant at all: such a fiasco is most liable to occur in the case of an elderly bride who is getting stout, or, perhaps, has an ovarian tumour.

The second and third examinations will avert many abnormal labours, and eventually save the doctor's time as well as safeguard the patient's health.

The last two examinations, carried out carefully, and followed by the correction of anything that is wrong, would do a great deal to remove the reproach that the obstetrician provides work for the gynaecologist.

Another definite indication for examination during pregnancy is found when a woman who has missed two or three periods complains of undue frequency of micturition, of difficulty in passing water, or of inability to retain it. In all these cases look for retroversion of the

gravid uterus. Early examination may avert the complication of impaction of the uterus and over-distension of the bladder.—*The Polyclinic*.

Gas in the Stomach: Its Causation and Treatment.

BY

FRANK KENNEDY CAHILL, F.R. C.S., D.P.H.

To quote the words of Professor Reed: "Such an important and obtrusive symptom as 'flatulency' needs to be elucidated and traced to its possible causes in language easily intelligible to every practitioner of Medicine."

At the outset I should like to define with a certain exactitude some terms employed—more especially "fermentation" and "putrefaction." It is unfortunate that these terms are frequently used as synonyms. *Clinically* speaking, it seems reasonable to suggest that the term "fermentation" should be used only to designate decomposition of carbohydrates.

There are four kinds of this sort of fermentation found in human stomachs; (a) lactic acid, (b) butyric acid, (c) acetic acid, (d) yeast fermentation. These form various products which may recombine among one another, the most characteristic products being (1) alcohol, (2) methane, (3) ethylene, besides the acids mentioned. The term "putrefaction" should be, I think, applied only to the decomposition of albuminous or proteid bodies.

While a few of the same products arise as in fermentation, the main end-products of "putrefaction" may be arranged in three groups: I. (1) Ammonia, (2) nitrogen, (3) carbon dioxide, (4) sulphuretted hydrogen, (5) methylmercaptan, (6) cystin &c. II. Series of amido acids. III. Aromatic derivatives of benzol, phenol, cresol, phenol-acetic acid, indol, skatol, tyrosin. We may contrast "fermentation" and "putrefaction," at least so far as they occur in the alimentary canal, roughly as follows:—

FERMENTATION.	PUTREFACTION.
1. Involves carbohydrates.	1. Involves fats and proteids.
2. Produces acids mainly.	2. Produces alkalies mainly.
3. Numerous bacteria, especially long threads and yeasts or fungi.	3. Colon bacillus mainly.
4. Mainly in stomach or upper portion of alimentary canal.	4. Mainly lower bowel and colon.

Having discussed these terms, I now proceed to enumerate the various causal factors in the production of gastric gas.

(1) Air swallowing, (2) chemic gastric respiration, (3) mechanic-gastric respiration, (4) inorganic production of CO₂, (5) organic production of CO₂ and associated gases, (6) spasm of cardia or pressure from without.

(1) *Air Swallowing*.—Deglutition always carries more or less air into the stomach. Normally the amount is insignificant, but, owing to rapid eating or drinking, gulping down large quantities of food or drink in a single bolus, and undoubtedly to peculiarities in the shape and mode of closure of the fauces and pharynx, so much air may be swallowed as to cause an excess of endogastric tension during and immediately after a meal. This tension is usually relieved by belching. The differential diagnosis depends upon (a) the time of belching, (b) the lack of odour of putrefaction or fermentation, (c) the absence of the neurotic element, (d) the normality of the gastric contents. Treatment depends rather on attention to etiquette than hygiene or medication. Though one has never been able actually to demonstrate an anomaly of the fauces or pharynx, yet the occurrence of this trouble in persons whose habits of swallowing are good suggests such a condition, and one is at a loss to suggest an appropriate means of correction.

(2) *Chemic Gastric Respiration*.—BENEDICT and REED deny the existence of chemic gastric respiration. According to the former: "All active cells absorb oxygen and give off CO₂, not to mention other katabolic products; but it is absurd to suppose that the thick glandular lining of the stomach can be compared to the diaphanous, squamous lining of the pulmonary vesicles. Moreover, respiration is an exchange, not a production, and it is impossible that any appreciable quantity of gas can be eliminated into the stomach by this means." The latter says: "I have not been able to convince myself that gases are secreted directly by the cells of the stomach, as has been claimed by some authors." On the other hand, HUTCHISON quotes EVANS, who brought forward evidence derived from a study of the gas contained in the swim-bladder of fish, in favour of the view that some of the nitrogen may be derived from the blood. EVANS bases his view on the result of two analyses. As this method of gas production is common to all stomachs it cannot be a very potent factor leading to flatulency of a distressing nature. On the other hand, if we do not accept the view that gases are transfused from or secreted by the blood we are at a loss to account for the sudden appearance of gaseous distension after abdominal operations, in intestinal obstruction, &c.

(3) *Mechanic Gastric Respiration.*—In hiccough there is necessarily a tendency for air to enter the œsophagus and stomach. Since the exciting cause is usually too rapid swallowing or swallowing of dry foods, it seems that hiccough is essentially conservative—nature's relief of the œsophageal spasm by dilating this tube with air, and, so to speak, endeavouring to blow through into the stomach any obstruction that may be present. In dilated or relaxed conditions of the œsophagus and cardia there may be then a suction into and expulsion from the stomach of air, as well as pulmonary inspiration and expiration. When, therefore, in neurotic patients, without evidence of gastric fermentation, and with somewhat conspicuous respiratory movements, there is repeated noisy eructation of gas, this condition should be suspected. There exists a disturbance of innervation, usually a laryngeal spasm, and, after the primary œsophageal spasm has subsided, a relaxation of the œsophagus. As to treatment, forced respirations, anti-spasmodic drugs, and the various devices suggested for the relief of hiccough, may be employed, even when this system is absent. Personally, I have found "lavage" quite satisfactory. It is possible that the cases of gastric gas reported as due to gastric respiration in the chemic sense (2) are mainly mechanic or due to the inorganic production of CO_2 , the next condition to be described.

(4) *Inorganic Production of CO_2 .*—BENEDICT lays stress on this mode of production, considering that there is present a super-secretion of gastric, pancreatic, and intestinal juices and bile with more or less patency of the pylorus, and that the meeting of hydrochloric acid with alkaline carbonates produces carbon dioxide. He contends that there are occasional cases in which enormous quantities of nearly odourless gas, shown by simple tests to consist largely of CO_2 , are given off by belching, and whose origin cannot be accounted for by any of the theories hitherto put forward. (We must remember that this writer denies the existence of chemic gastric respiration). The patients are neurotic, the waterbrash, or vomited matter or wash water, is nearly clear, and contains nothing but a little mucus and the usual slight debris of a jejune stomach, except that, occasionally, bile pigment may be seen. Effervescence is heard in the region of the pylorus. Especially do these cases fail to give evidence of fermentation and to respond to antiseptics unless the antiseptics are distinctively sedative. Our knowledge of the amounts of these secretions and of their percentage of acid and alkali shows that a very considerable amount of gas might be produced. In these cases the failure of antiseptics will often suggest the proper diagnosis, or, at least, will lead to the employment of sedatives. Bismuth is indicated locally, the coal tar and mydriatic anodynes by the mouth.

(5) *Organic Production of CO_2 and Associated Gases.*—With all the favouring conditions present it is a wonder that the gastric bacteria and fungi do not invariably cause a notable production of the gases of putrefaction and fermentation, especially as there is so often superadded a supply of germs from septic stumps and nasal cavities. The lack of such gas production is ascribed to (a) the comparative shortness of gastric digestion, (b) the removal of fermentable and putrescible material by digestion and absorption, (c) the antiseptic action of hydrochloric acid. Most authorities consider the last as relatively unimportant on account of the dilution of the acid; but it must be of considerable importance, as the other circumstances are merely negative. It must be remembered, moreover, that the standard of the bacteriologist is a lethal one, that of the physiologist and the therapist merely inhibition of the vegetable cell. I take it, then, that gastric putrefaction may be assigned to two sets of causes—disturbance of intestinal peristalsis, including cancer, and the various types of ulceration. The treatment of the underlying condition, often involving surgical interference, is beyond the scope of this paper. The milder measures which are usually ample in the treatment of fermentation cannot be relied upon to cleanse a stomach in which proteolytic bacteria are at work. Various antiseptics have been used, but I think a 4 per cent. solution of borax and sod. bicarb. will be found efficient. While it is impossible to disinfect by the mouth a foul stomach full of chyme, it is perfectly possible to keep a jejune one relatively aseptic by administering salacetol or some similar antiseptic, with moderate amounts of water. Hence the value of administering nutrient enemata and cutting off all nourishment by the mouth.

Again, gastric fermentation is often considered as amylaceous dyspepsia; starches are withheld as far as possible, and diastase is given to ensure their prompt digestion. While it is true that "ptyalin" digests cooked starches into maltose, and that small quantities of "invertin" are secreted by the stomach, to convert this maltose into glucose, the amount of starch digestion that normally takes place in the stomach is insignificant. When much gas is formed in the stomach from carbohydrates the reason is usually that there is a failure of normal antisepsis due to hypochlorhydria.

In estimating the "acidity" due to HCl one may be deceived by testing the "filtrate" after a test-breakfast, as a weak stomach may react normally under the light burden of that meal, though it may not produce sufficient HCl under normal diet; just as a weak spring may rise as high as a strong one under a small load.

While gas production from proteids requires organic cleansing of the stomach and physiologic rest, carbohydrate fermentation may be treated by antiseptics. Usually, they are also indications to increase the amount of HCl both by its administration as such, by increasing the chlorides, by giving sodium chloride in excess at the meals, and stimulating the gastric glands by giving strychnine. Charcoal, if given in large doses, is of some value in fixing gas, but it will not prevent gas formation.

(6) When, through spasm of the cardia or pressure from without, gas however produced, is not freely eructated, it must either pass through the pylorus or produce characteristic symptoms from distension of the stomach. The cases in which gas is produced by a mingling of gastric and alkaline intestinal juices cannot lead to distension of the stomach alone, but spasm, kinking, or other obstruction below the pylorus may confine the gas of the stomach and part of the upper small intestine. Most cases, however, seem to be due to organic formation of gas, and mainly to fermentation of carbohydrates. Mild forms are best treated by the administration of hot carminative drinks, change of posture, &c. Such cases are very common; they are especially frequent at night, perhaps because some posture during sleep favours pressure of the liver on the pylorus, duodenum, or upper coils of the jejunum; perhaps because lessened peristalsis allows an accumulation of solid and liquid intestinal contents, so that a trap is formed in the intestine. Whether the closure above is entirely spastic—and one would scarcely consider sleep to favour the development of spasm—or due to the pressure of the liver on the œsophagus, it is difficult to say; but there is no question that gastric distension is favoured by lying on the left side.

"Nightmare" is frequently due to this cause, and one can only decide by the state of the pulse and the heart sounds in any particular case whether the sense of cardiac interference is mainly genuine or due to the "nightmare." Most of these cases are relieved spontaneously or by domestic treatment, and apart from the passage of the stomach tube to relieve gas-pressure the treatment is prophylactic, to prevent the formation of gas, a subject which has been dealt with in the course of this paper. Having passed, in somewhat sketchy review, the various theories of gas formation in the stomach, I would, in conclusion, enter a strong plea for the more careful investigation of these cases, so often recurring in general practice, and instead of routine mixtures for "wind" so often prescribed I would substitute a minute and searching inquiry into primary causes—their removal resulting in credit to ourselves and service to our patients.—*The Hospital*.

Tuberculosis, Pulmonary: Intravenous Injections of Chinosol with Formaldehyde in.

The author reports good results in 3 cases of phthisis treated with intravenous injections of chinosol, a quinine potash compound and powerful germicide, in conjunction with formaldehyde. Fifty cubic centimeters of a 1:2000 solution of formaldehyde plus 1:4000 solution of chinosol were injected daily into median-basilic or median-cephalic vein, the solutions being gradually increased. Case 1 was given 33 successive injections, the strength being increased to 1:500 of formaldehyde and to 1:1000 of chinosol. Beyond slight gastric disturbance the patient was not inconvenienced. This case had been ailing almost twelve months, with hemoptysis, pleurisy, cough and profuse expectoration and has lost considerable weight. Under the injections he recovered his weight and rapidly regained strength. All physical signs disappeared, excepting deficiency of expansion at the apex, due to contraction in healing, and tubercle bacilli, previously abundant in the sputum, could no longer be found. One year after the treatment, patient was working hard, and expectoration was absent. Case 2 was much improved by the injections, though a tendency to phlebitis interfered with the treatment. Case 3 received 36 injections and made rapid progress toward recovery, expectoration being almost absent and the number of tubercle bacilli greatly reduced. As to the question whether the injected substances exert a destructive effect on the bacilli themselves or cause a reactive inflammation around the tuberculous area and so encapsulate the caseous mass, the specific action of quinine in malaria would suggest the possibility of the former mode of action.—*Monthly Cyclopaedia & Medical Bulletin*.

Laryngeal Tuberculosis: Treatment of.

The author lays stress on the necessity for early diagnosis of this condition in order to have any real chance of ultimate success in its treatment. The diagnosis should have been made even before the appearance of changes in the voice and local pain, and this can only be attained by systematically examining the larynx in cases of pulmonary tuberculosis.

Treatment of the general condition is of prime importance in this affection. Improvement or cure of the laryngeal disease is conditional upon the securing of a like result in the pulmonary lesions.

The local treatment may be conservative or radical. In febrile or complicated cases and in cases where extension of the tuberculous process in the lungs is apprehended, conservative measures alone should be

employed, including functional rest of the larynx, antiseptics of the nose, mouth and pharynx, insufflations of analgesic powders containing orthoform or morphine, instillations of oily preparations containing menthol, orthoform, or both; e. g., orthoform and menthol, of each 2.5 to 5 grams (37½ to 75 grains), in oil of sweet almonds and olive oil, of each 50 grams (1½ ounces). The use of solutions containing cocaine before meals, and the injection of alcohol into the superior laryngeal nerve, may also be resorted to. Inhalations are beneficial only in exceptional cases. In afebrile cases, radical measures such as cauterization, curettage or excision of diseased tissues may be attempted. Tuberculin treatment is to be used in these cases only with extreme reserve and caution.

The author has had 416 cases of laryngeal tuberculosis under his cure in the last fourteen years. The average duration of institutional treatment was one hundred and forty days. The results obtained were as follows: Cure, 24 per cent.; marked improvement, 33.9 per cent.; slight improvement, 12.2 per cent.; no improvement, 22.6 per cent.; exitus, 7.3 per cent. In the "open" tuberculous cases the percentage of cures was 19; in the "closed" cases, 67. 4.—*Monthly Cyclopaedia & Medical Bulletin*.

New Signs of Pleuritic Effusion.

In the French current medical literature attention has been drawn to two new signs which may prove of clinical value in the diagnosis of pleuritic effusions. The first one has been demonstrated by Dr. FELIX RAMOND and an account of it appears in *Le Progres Medical*. He calls it "the sign of the spinal muscles"; it consists in the fact that in a case of pleurisy the muscular mass constituted by the long dorsal and iliocostal of the affected side is in a state of permanent reflex contraction. On inspection the muscular mass, especially in the lumbar region, appears more prominent and swollen on the affected side. On superficial palpation, and more especially on deep palpation, the muscles feel hard and resistant, comparable with a slightly stretched cord of india-rubber and quite different from the softer feeling of the muscles on the sound side. If the upper attachments of the long dorsal at the sixth and seventh dorsal vertebræ be percussed, and at the same time the hand be applied to the muscular mass in the lumbar region, the muscle is felt to vibrate and the reflex contraction may be so strong as to be visible to the naked eye. This last sign may, however, be dependent upon an exaggerated muscular reflectivity, apart from any pleuritic effusion. The difference between the two sides is best brought out by making the patient

lie first to one side and then to the other. Under normal conditions the muscles on the flexed side completely relax, but in the presence of pleurisy they do not lose their tonicity in flexion of the same side, and in flexion of the opposite side they are exaggeratedly firm and contracted. This abnormal condition of the muscles persists often for some weeks after other signs of pleurisy have disappeared so that this muscle sign may serve to afford a retrospective diagnosis.

The second new sign is described by Dr. P. MAURIAC. The patient should be seated or standing and the physician places his hand on the lower part of the chest, so that the thenar eminence rests on the hypochondrium and the pulp of the middle or index finger in the sub-xiphoid fossa. In this position the medius or index finger percusses lightly, the percussion being performed with the pulp and not with the tip of the finger. In this way a hard clapping sound should be obtained. At the same time the stethoscope is applied to the back of the chest, first to one side and then to the other. On the side where there is no effusion a heavy, distant, muffled sound is heard, but on the side of the effusion there is a hard clapping, almost metallic bruit. Examination for this sign requires practice, especially to obtain the proper percussion, which necessitates a certain elasticity of the finger. The author points out that the sign has the advantage of not requiring any instrument or assistance, and as the percussion point is the same for both lungs comparison is much simpler and much more exact.—*The Hospital*.

Auscultation of Joints.

In a paper read before the Royal Society of Medicine, and printed in the *Lancet*, Dr. GARROD describes the diagnostic uses of auscultation when dealing with diseases of joints. An ordinary stethoscope is used; after a little practice it is possible to dispense with an extra small chest piece, a rubber ring, or other aid to coaptation. The knee is the joint which best lends itself to auscultation; at either side of the patella it is easy to apply the stethoscope and to hear abnormal sounds when the joint is flexed and extended. Most of the other large joints can be similarly studied, and even some of the small joints also. A normal joint in a young subject is silent, save for the loud clicks which some people can produce at will; these are vacuum sounds. In those past middle age there may be abnormal sounds when the patient is quite unconscious of any articular disability; probably these are premonitory signs of osteoarthritis. A distended joint is noiseless, but crackles appear as the fluid is absorbed and the synovial surfaces are once more in contact; these noises

resemble those heard with the stethoscope over the site of surgical emphysema. Tubercular joints are usually silent, and so are those in the acute forms of rheumatoid arthritis; in both diseases the main stress of the inflammation is in the periarticular tissues. Scrunching sounds are typical of osteo-arthritic changes, erosion, and such like. A rubbing, friction-like sound is heard in late stages of rheumatoid arthritis; and just as characteristic is another sound which can be heard over inflamed tendon sheaths. The author lays down no definite rules, but suggests that further study may tend to establish the method as one valuable in the differentiation of articular diseases.—*The Hospital*.

SURGERY.

Uræmic Aphasia.

R. SAUNDBY, M. D., F. R. C. P.—On Jan. 13 the writer saw in consultation a man aged 53, who had been seized on the previous day with loss of speech. This had passed off, and only a little slowness in articulation was noticeable. There was no loss of power on the right side, and the right plantar reflex was flexor. The knee-jerks were exaggerated. The pulse was hard; the apex beat was not displaced. Urine 1014, acid haze of albumin, no sugar, deposited a few slender granular casts. Sight normal. He was well developed, sparsely nourished, but muscular; not cachectic-looking, and had been a great athlete.

The history was that at 20 he had acute nephritis; he was ill 6 weeks, but was supposed to have made a good recovery. Fifteen years ago, however, he was rejected for life insurance on account of albumin in the urine, and he had frequent attacks of gout during the last 15 years. He had profuse epistaxis 11 years ago. In May, 1909, he was found standing by his dressing-table unable to speak; he vomited and was put to bed; there was no definite hemiplegia, but afterwards his right hand felt numb. He recovered in about a fortnight, but never since resumed his occupation. In July he had an attack of convulsions, after which he was unconscious for 12 hours. In September he had a second attack of aphasia, with a loss of consciousness, lasting a few hours. Later in the same month he had two attacks of convulsions, followed by unconsciousness and violent delirium. In March, 1910, an attack of aphasia with slight unconsciousness was followed by delirium and mental symptoms which lasted 6 weeks. In September he had another attack of aphasia; in November his pulse became very slow, falling to 20. Early in December there was a slight aphasic attack.

Transient aphasia in uræmia is rare. A case was published by the late Sir T. GRAINGER STEWART, in which transient aphasia was associated with facial paralysis and some weakness of the right arm, and another by Dr. SAMUEL WEST of recurrent attacks of right hemiplegia with aphasia extending over 8 years. There was no albuminuria, but the arteries were thickened, and there were "two small patches of degeneration of the ordinary kind in the right eye." In the present case there is no doubt of the presence of chronic renal disease; the uræmia associated is attested by the occurrence of convulsive attacks. It is noteworthy that the aphasia was not attended by hemiplegia.—*The Medical Review*.

Septicæmia Hæmorrhagica.

BY

W. G. SPENCER, M.S., F.R.C.S.

There is a class of grave and fatal hæmorrhages which cannot be ascribed to any congenital lesion such as hæmophilia, nor to degenerative lesions, such as occur in Bright's disease, or to the toxic influence of alcohol. They may occur from a mucous or serous membrane without any naked-eye breach of surface; or from a raw surface without any special blood-vessel being opened; or into an organ without any preliminary traumatism or degenerative process. Such hæmorrhages are well-known complications of the specific and tropical fevers, as well as of scurvy. They cannot be attributed to an excess of blood pressure, for they recur from the nose or gastro-intestinal canal when the patient has become very weak.

The term "septicæmia hæmorrhagica" in veterinary pathology is applied to an important class of epizootic fever. In 1878 Bollinger described the disease as causing a great fatality among deer, wild boars, cattle and horses, in Bavaria. LIGNIER discovered in the so-called hæmorrhagic influenza of horses a cocco-bacillus. In France a disease of cattle distinct from rinderpest has been termed Pasteureusis bovis; in it there occur hæmorrhagic pneumonia, pleurisy, and peritonitis. In India and Egypt hæmorrhages occur with malignant sore throat, or strangles, in horses and cattle, and even in hardier animals, such as mules and elephants.

Returning to human pathology, there occur cases of hæmorrhagic empyema and ascites. OLIVER has described cases of thoracic empyema followed by fatal hæmorrhagic oozing from the wall of the cavity; the organisms found were the diplococci of Friedlander, not the pneumococcus. (In these cases injury to an intercostal artery or pulmonary

vessel was excluded). Hæmorrhagic ascites has proved very fatal, doubtless due to infection by organisms.

The term purpura includes a collection of hæmorrhagic diseases. Some are traceable to streptococcal infection, especially when a complication of puerperal fever. Melæna neonatorum forms another class of fatal hæmorrhagic disease. Among the organisms identified are not only streptococci, but also *Bacillus Pyocyaneus*, staphylococci, short bacilli and Friedlander's pneumo-bacillus. KLEBS in 1875 found a micrococcus in 9 new-born children who had died of melæna, the cultivation of which produced in young rabbits fatal hæmorrhagic lesions. In 3 cases reported Tizzoni and Giovanni, children of the same family, died of a contagious pustular impetigo accompanied by hæmorrhage. *Staphylococcus pyogenes aureus* was found in both primary and secondary lesions. The hæmorrhages were traced by microscopic examination to thrombosis of the smaller vessels by the staphylococci. The acute hæmorrhages which complicate diphtheria of the fauces are very fatal.

Acute hæmorrhages into the stomach as shown by black vomit constitute a grave complication of the specific and tropical fevers. In surgical practice they occur late in such cases as intestinal obstruction, gall-bladder suppuration, and gangrenous appendicitis, and may follow operations when sepsis cannot be prevented.

Dr. F. W. ANDREWS has published the following case of muscular hæmorrhage following typhoid fever:—

A man, aged 18, the subject of double chronic otitis media, was admitted to St. Bartholomew's Hospital during the third week of an attack of typhoid fever. Before the temperature became normal he had a relapse, and died on the fifty-second day. On the day before death subcutaneous hæmorrhages appeared on the feet and elsewhere; in addition there formed a considerable swelling in the left thigh with œdema of the limb below. Post mortem, in addition to the lesions characteristic of typhoid fever, there was found a diffuse extravasation of blood into the muscles. From the muscles of the thigh and from the blood-clot a pure cultivation of streptococci was obtained, but no typhoid bacilli. The streptococci were not evenly distributed in the muscles, but had especially collected about the arteries and veins. Of leucocytic aggregation there was little or no evidence. Hæmorrhages may be produced by poisons such as phosphorus and benzene.

HÆMORRHAGIC CELLULITIS.

In the following cases of acute hæmorrhagic cellulitis on incision no distinguishable pus escaped, but blood poured out freely.

Hæmorrhagic Cellulitis of the Arm.—A previously healthy man, aged 25, had an extensive swelling of the arm and forearm, which had followed a slight abrasion of the hand. The subcutaneous tissue of the arm and forearm seemed to be distended by pus. But on incision blood-clot escaped, then fluid blood poured out, and alarming signs of acute anæmia developed. No single vessel could be seen to bleed, although incisions were extended along the line of the blood vessels. Only by very firm packing of every part of the involved area, followed by bandaging, was the bleeding controlled. The exposed tissue soon became covered by granulations, and healing followed.

Acute Hæmorrhagic Cellulitis of the Left Buttock and Thigh.—A labourer, aged 47, was admitted in a weak state and with lemon-coloured pallor. He had been ill for 6 weeks without evidence as to cause. A deep-seated elastic resistance filled the left iliac fossa, the left buttock, and upper third of the thigh. In the thigh the swelling was more superficial, and the skin over it showed a dusky brown brawny œdema. The circulation in the left leg and foot was as good as on the opposite side. The pulse was 152, the respiration 40, and the temperature 100·4. Impressed by his pallor, which he took to indicate concealed hæmorrhage, the writer made a narrow puncture with a knife in four places into the swollen thigh, keeping well away from any vessel. From each puncture bright blood poured out and quickly clotted. No pus was reached. Each puncture was plugged firmly with gauze. He would soon have bled to death, had any freer incision been made or a drainage tube been inserted. A diplococcus was cultivated from the blood which escaped. At each dressing clots of blood with turbid serum escaped, but no pus. The swelling diminished, but the man became weaker, his temperature rose to 104°, his pulse to 172, and he died 3 weeks after the incision. No necropsy was allowed, but the nature of the case was confirmed by the infection of 2 patients in neighbouring beds with erysipelas.

Hæmorrhagic Cellulitis round the Knee.—A carpenter, aged 27, was admitted. A month before he felt on returning home one night great pain in the right knee. He therefore rubbed in horse oils and turpentine. Then the knee was poulticed for a fortnight. A week before admission a discharge commenced, and the swelling began to spread down the leg and up the thigh. On admission he was very pale, weak and half delirious. On incision a little pus, but chiefly broken-down blood-clot, escaped, so that it was impossible to irrigate the cavities. Compared with the previous cases, blood did not pour out, but only re-collected in the cavity as clot. There was no sign of an arterial lesion or of disease

of bone. A week later, amputation was performed a little above the knee. The lower end of the thigh and upper part of the leg was extensively infiltrated by pus and broken-down blood clot, but the bone was unaffected, and there was no lesion of the large blood vessels. Recovery followed. No doubt the cellulitis arose from the pustules raised on the skin by the horse oils followed by the poulticing.

Acute Subcutaneous Hæmorrhage following a Viper's Bite.—A man was bitten by a viper, on the dorsum of the proximal interphalangeal joint of the middle finger. When seen about 2 hours later, he was very pale and collapsed. His arm and forearm were much swollen, bright red, and there was marked pulsation of the forearm. The swelling was due to extensive extravasation of blood into the subcutaneous tissue. In the next 6 weeks the colour of the limb passed through the stages of red, blue, and yellow, as the blood-clot was absorbed. Suppuration was limited to the area around the punctures made by the viper's fangs.

Hæmorrhagic Enteritis.—A girl, aged 24, had diarrhoea and occasional hæmorrhages from the bowel, vomiting, and foul stools. Then she began to pass large quantities of blood, and lapsed into a state of acute anæmia, with a pulse of 120. At no time did the temperature vary much from normal. There was an absence of all signs of typhoid fever or tuberculous enteritis. She died after a long illness. On the day preceding death there was noted for the first time a tenderness in the right iliac fossa, followed by signs of commencing infective peritonitis. The writer could detect an enlarged appendix, yet the general condition was different from the common type of acute gangrenous appendicitis. She was very pale, with sunken cheeks, but had no earthy look. The tongue was pale, moist, tooth-indented but not furred. The pulse was very rapid and weak, 130 or 140, but the temperature continued normal. The abdomen was a little tumid, but nowhere persistent nor tender, except over the appendix. The appendix was removed as quickly as possible. No gangrene or pus was met with. The peritoneum was congested around and blood-stained fluid was sponged out of Douglas's pouch. The patient failed to react to saline infusion and died 4½ hours after the operation. The appendix was distended to the size of the end joint of the little finger by blood and mucus. Microscopic examination showed acute hæmorrhagic inflammation of the mucous and submucous coats, in which were numerous cocci and rods.

Several grave cases of hæmorrhage from the kidney and bladder have come under the writer's notice which cannot be classed under common causes of hæmaturia.

Renal Hæmorrhage.—For more than 10 years a man, aged about 44, had what was supposed to be intermittent albuminuria and attacks of pain in the right side which were thought to be colic. He perhaps occasionally had slight hæmaturia. He was next seized with acute pain on the left side, with obstinate constipation for a week. After a second attack of acute pain on the left side, hæmaturia and albuminuria were noted. The X-rays showed that the right kidney was occupied by a large branched calculus. In the left renal pelvis was a stone the size of a large orange pip. Evidently the right kidney had been slowly destroyed by a calculus and the so-called intermittent albuminuria was due to the discharge of a small amount of pus; and the left sided attacks were due to a calculus temporarily blocking the left ureter and threatening life. Therefore the left kidney was first operated on. It was enlarged and vascular. The stone was extracted without special hæmorrhage, but 3 days later free hæmorrhage occurred and the wound had to be plugged. The clot which collected in the wound and around the kidney decomposed. After the wiping and syringing out of the broken-down clot no further hæmorrhage occurred. But the left ureter remained for a long time blocked by clot. The patient improved so much that a month after the first operation the right kidney was removed. This had been reduced to a friable abscess cavity enclosing a large branched calculus. The second operation wound healed in about 6 weeks. The first wound continued to discharge urine and very little passed into the bladder until 3 months after the operation, when the sinus had become very narrow. Then one day he was seized with pain down the course of the left ureter, the obstructing clot moved on, and urine passed into the bladder, upon which the sinus closed. Two and a half years after the operation he was in fair health, but there were traces of pus in the urine.

HAMMERSLEY has described a patient who had attacks of pain in the right kidney with severe hæmaturia which was relieved by removing an inflamed appendix, and he attributed the renal affection to infection spreading from the appendix. EVE recorded a case of fatal hæmaturia due to psorosperms. POSNER found anæbæ in a man subject to attacks of hæmaturia.

Fatal Hæmaturia without Obvious Lesions.—A man, aged 44, previously in good health, noticed blood in his urine; there was neither pain nor frequency of micturition. The hæmorrhage increased to an alarming extent and after a fortnight he was admitted to hospital very anæmic,

almost pulseless, and breathing rapidly. The bladder was tensely distended but not tender. The temperature was subnormal. He was infused subcutaneously and per rectum with saline fluid; he passed urine containing a large quantity of blood; gradually became pulseless, and died within twelve hours of admission. The necropsy threw no light upon the cause or source of the hæmorrhage. The bladder contained a small quantity of bloody urine, which was not found in either kidney pelvis. This was the only evidence in favour of the source of hæmorrhage being the bladder rather than the kidneys. No organisms were identified. Perhaps this case is like those which GULL names "renal epistaxis," and Klemperer "angioneurosis."

In this paper are obviously included cases which differ widely from one another. Some cases of septicæmia hæmorrhagica have been certainly caused by streptococci. If the classification of ANDREWES and HORDER be adopted, one may include under streptococci the pneumococci, coccobacilli, and other varieties which have been found. The hæmorrhage may be explained by supposing the organisms to collect, as described by ANDREWES, especially in contact with the walls of the blood-vessels. Under the effect of the toxins the walls of the vessels become weakened and give way. This occurs without intravascular thrombosis, which in ordinary acute inflammation must be the chief factor in preventing hæmorrhage. Neither is there any massive collection of leucocytes at the inflammatory focus, so that very little pus forms. The identification of streptococci as the commonest organism suggests immediate recourse to streptococcal antitoxin, whilst the identification of the particular organism is being made. The first case of success by the use of streptococcal antitoxin was reported by BALLANCE and ABBOTT. A finger was pricked at a necropsy on a case of suppurative peritonitis, and acute septicæmia set in, complicated by cutaneous hæmorrhages. Immediate relief followed the use of streptococcal antitoxin. When the infection is not due to streptococci, or is a mixed infection with staphylococci or *Bacillus Pyocyaneus*, the preparation and injection of an auto-vaccine should be carried out as quickly as possible. As the extravasated blood clots readily, administration of calcium chloride is useless.—*The Medical Review*.

Iodine the Ideal Antiseptic.

Major F. T. WOODBURY, Med. Corps, U. S. Army.—The writer believes that iodine is the long-desired ideal antiseptic. It is cheap, easily obtained, portable in small bulk, efficient in high dilution, does

not damage tissue, even when its vitality has been reduced by traumatism or infection, and though it has great powers of tissue penetration the writer has not yet seen a case of poisoning even when it was mopped in full strength on the peritoneum and in the parturient uterus. It can be used to disinfect the area of operation without previous preparation; to sterilize instruments, suture material, dressings, and the hands of the surgeon, during the time that the patient is going under the anæsthetic. But the writer prefers to boil his instruments when he can, as the continued use of iodine tarnishes and blunts the cutting edges, though the same in a lesser degree holds for the soda solution.

The writer uses iodine entirely to prepare his hands and it rarely causes irritation. It can be removed with boiled or raw starch, ammonia water, aromatic spirit of ammonia, hydrogen peroxide, Fowler's solution, or ether. If long periods of operating are expected, it is well to dip the hands in iodine and immediately decolorize with ammonia; rubber finger cots or rubber gloves may be slipped on, and then redipped in the iodine. This is merely to protect the operator's hands from being dyed a deep brown, which is almost impossible to get rid of if the tincture is applied every one or two days.

The solution of one teaspoonful of the tincture to the quart of normal saline solution (·007 per cent.) is most efficacious for irrigation in all inflammatory and catarrhal conditions of mucous membrane. It can be used for conjunctivitis with prompt improvement. The writer has not had an opportunity to use it in gonorrhœal ophthalmia, but as he has found it to be very efficacious in acute urethral gonorrhœa in twice and three times this strength he believes it may have some value here. When a case of mumps developed in a company of infantry, this solution was used copiously as a gargle for several days by the men. No other case developed. It is a routine treatment for all acute throat affections. In tonsillitis the tonsils are mopped once daily with the tincture and Bier's treatment with a rubber bandage around the throat has reduced the illness to an average of 5 days. Used as a spray it promptly aborts colds.

The iodine salt solution is excellent in cystitis, acute and chronic, and catheters kept in tincture and then transferred to this solution just before use are sterile, non-irritant, and perfectly pliable.

Troublesome chancroids with suppurative inguinal adenitis which last many weeks rapidly heal under vigorous application of the tincture. Buboës, which have already broken down, promptly become healthy granulating wounds and heal up without further trouble.

Tincture of iodine is the most valuable drug for the railroad and army surgeon. The writer always takes a quart in two bottles when serving with troops in the field. With it as good results may be attained in the cottage as in the marble-lined pavilion.

SENU, JEWETT, GROSSICH, BERNUCCI, and others have recommended iodine as a disinfectant of the skin in the area of operation and BERNUCCI, after the writer, as a disinfectant for the surgeon's hands. The writer has practised this method since 1906. His first reported case, a successful Cæsarean section on a native of the Island of Samar and performed in an old thatched shack, was read before the Manila Medical Society in 1906. He used tincture of iodine in the wound and on the suture material and as a post partum douche. Further experience leads him to recommend it as the sole antiseptic throughout operations for sterilising hands, instruments, and suture material (at the time of operation without previous preparation), and for its local application in full strength throughout all wounds and suppurative cavities and on every raw surface infected or likely to be infected, and as an irrigation, in varying strengths, in all phlogistic conditions. In the text-books the only reference to iodine as an antiseptic is in a vague way as being liberated from iodoform in the cavities of tuberculous abscesses or as used in the Claudius method of preparing catgut.

A primipara, aged 34, was delivered of a dead child by a high forceps operation, after a protracted and difficult labour. The placenta was retained and she was removed to hospital on the following day with a severe laceration of the perinæum extending into both lateral fornices and almost down to the sphincter, and slight laceration of the os uteri. The writer and his assistants sterilised their hands by dipping them into tincture of iodine. The instruments were boiled. The uterus and vagina were thoroughly irrigated with the iodine saline solution at 105°. The placenta was adherent and was removed manually. The uterus and perineal wounds were mopped with tincture of iodine. The lacerations were repaired with silkworm gut dipped in tr. iodi. and the uterus and vagina were again irrigated with the iodine saline solution. Twice daily the iodine saline solution was used as a douch. On the day of operation the temperature was 100°; on the following days it was normal. The stitches were removed on the tenth day and on the twenty-first day she was doing ordinary house work. The wounds healed as promptly as though they were skin scratches.

On May 12, a soldier, aged 29, sustained lateral dislocation of the left knee with severe laceration of the internal lateral and capsular

ligaments. On June 3 it was decided to open the joint to relieve the lateral luxation which prevented standing. Tr. iodi. was used for sterilizing the hands, the area of operation, the depth of the wound, the suture material, and the completed line of suture. The joint was explored with the finger, but seemed normal, so the internal lateral and capsular ligaments were freshened and sutured with kangaroo tendon. The skin incision was closed with silkworm gut. A dry dressing was applied. Convalescence was rapid without pain or fever.

A soldier, who was addicted to alcohol, and had albuminuria, was operated on for acute intestinal obstruction. The abdomen though very hairy was not prepared further than by mopping it over with tincture of iodine. The surgeon's hands were dipped in the tincture, and an incision was made from the umbilicus to 2 in. above the pubes. The peritoneum bulged up and when knicked much ascitic fluid welled forth. The small intestine was chocolate coloured and motionless for about 1 yard. A constricting point, feeling like gristle, was found deep down to the left of the spine. This was separated with difficulty by careful manipulation, leaving several bleeding areas. The strangled gut was so friable that one mesenteric vessel ruptured and bled profusely. This was ligatured with fine silk and every bleeding spot was mopped with the tincture of iodine. The intestines, after a few moments' application of hot damp towels resumed their normal colour and peristalsis. The abdominal wound was closed layer by layer with silk sutures, applications of the tincture of iodine being made, the skin with silkworm gut. The drug was mopped on leaving a dry surface, as it is styptic and any excess may cause pain or annoyance later.

The patient rallied well and was given continuous enteroclysis during the night. The temperature at 6 P. M. was 100.2° and pulse 110. The patient sat up 24 hours after the operation. The pulse and temperature were normal on the third morning and his diet was restricted only by his appetite. He sat up every day in a chair until fatigued and on the tenth day the stitches were removed. This case shows how well iodine is borne by the peritoneum and how rapid convalescence is.

A soldier, aged 24, was run over by a heavy wagon, sustaining compound fracture of both bones of the leg. He was taken to hospital 10 miles across the prairie, in the military ambulance. Under chloroform the writer removed the clothing and shoe. There were a nasty wound with about 3 in. of tibia lying crossways in the leg, much crushing of soft parts, and numerous splinters of bone. The foot was warm

and the circulation good. The writer washed some of the prairie dust from his hands, dipped them in tincture of iodine, and explored the wound. The sergeant held the foot in extension in the axis of the leg and the writer refitted the broken fragment of the tibia in place, brought the splintered ends of the fibula in approximate apposition, and removed the splinters and shreds of flesh. Several long tension sutures were applied to approximate the severed muscles, and the wound was thoroughly mopped out with tincture of iodine. No more was attempted as the tissues were too damaged to attempt manipulation and wiring the bones would have caused extensive necrosis. A posterior wire splint was applied with Plaster of Paris reinforcement and a large anterior fenestrum, while the bones were held in alignment by the steady traction on the foot. A dry dressing to absorb the expected copious oozing of serum was applied. The wound was irrigated daily with the iodine salt solution. Some sloughing took place, and when this had ceased repair was rapid. There was never suppuration, fever, or pain. Eight weeks after the accident the wound was healed; the lower end of the fragment had united by firm bony union and the upper by fibrous union.

A soldier, aged 23, while on march had the pulp of 4 fingers almost torn off by being caught in a wagon chain. The fingers were washed with water, the wounds mopped with tr. iodi. and the crushed tissues replaced. Daily treatment with iodine during the march resulted in primary union.

A carpenter had a slight wound of the finger which he treated himself. He sought advice with a temperature of 103°, sweats, chills, and a greatly swollen elbow and forearm. Under cocaine anæsthesia (2 per cent.) the arm was mopped liberally with iodine and a 4 in. spiral incision was made over the elbow down to the humerus and ulna, evacuating pus from the epitrochelear glands and lymphatics. The wound was irrigated with iodine saline solution and drained with strips of gauze wet in the same solution. Six hours later the temperature was normal. The arm was carried in a sling and the wound irrigated daily for 4 days. Ten days after the operation he resumed work with perfect function of the arm.

Six cases of ingrowing toe-nail were treated by the usual method of excision of the offending border with its matrix. The toes were not even washed but were mopped with iodine before and after operation. In every case primary union took place.—*The Medical Review*.

OBSTETRICS AND GYNÆCOLOGY.

Obstetrics and Gynæcology: The use of Pituitary Extract in.

From his experience with pituitary extract in 70 cases, the author considers it a useful addition to our armamentarium in the treatment of hæmorrhage, intestinal paresis, and shock. It is essentially a remedy for emergencies and is only to be used in a routine method with the greatest caution. Like other powerful pressor substances, infundibular extract has been shown experimentally to produce arterial degeneration if administration is long continued. The author made use of the extract put up in small sealed glass flasks and issued under the name of "Vaporol." The contents of each flask constitute the ordinary adult dose. When it is necessary to give a second dose it should be remembered that such will produce but little effect unless some time has elapsed since the previous dose. For the purpose of contrasting pituitary extract with ergot and its allies, the author used it in normal labor cases and found the uterus to contract better, more quickly and more persistently than under ergot. It should not be used, however, until after completion of the third stage of labor, with the possible exception of certain cases of placenta previa. The author gives brief histories of 11 illustrative cases. Among them is 1 of placenta previa in which, after version and expulsion of the foetus, removal of the placenta was accompanied by profuse hæmorrhage. An intra-uterine douch of weak bichloride of mercury at 120° F. was given and pituitary extract injected deeply in the buttock, after which there was no further loss and the uterus remained well contracted. Several cases of normal labor followed by hæmorrhage or relaxation of the uterus, in which the extract gave good results, are also cited. In 3 cases of intestinal paresis following operations for ovarian cyst and ectopic gestation, prompt relief was obtained by injections of the extract. In a case of subinvolution of the uterus, the patient suffering from menorrhagia, for which she had recently been curetted without result, and having soft, flabby tissues and low blood-pressure, the author decided to try the effect of repeated doses of pituitary extract. Six injections were given in as many weeks. The uterus underwent contraction from 5 to 3 inches as measured by the sound; the general condition was much improved, and had remained so six months after the treatment. During the administration of the pituitary extract marked polyuria was noted. No deleterious effects resulted. The author suggests that the use of the extract in subinvolution be limited to cases with associated low blood-pressure.—*Monthly Cyclopædia & Medical Bulletin*.

Puerperal Eclampsia : Treatment.

The author reports the results obtained with a plan of treatment having for its purpose rapid elimination of a part of the toxins responsible for the eclamptic symptoms and mitigation of the effects of the remainder by dilution of the blood. To accomplish this he combines venesection with intravenous infusion of normal salt solution. The skin of the arm is cleansed, a constricting band applied, and any prominent superficial vein, preferably the median basilic, exposed. Two ligatures are tied around the vein with a single knot, from $\frac{1}{4}$ to $\frac{1}{2}$ inch apart, the vein divided half way through its circumference, and two thin-walled glass cannulæ inserted successively on either side of the opening, one cannula pointing distally, the other (that for the salt solution) proximally. The cannulæ being tied in by means of the ligatures, the desired amount of blood is allowed to escape and a sufficient quantity of salt solution introduced. The cannulæ are then withdrawn and the vein obliterated by tying the two ligatures. In emergencies a fountain syringe with the glass tube of an ordinary medicine dropper may be used to convey the salt solution into the vein, and the blood allowed to escape by simply loosening the distal ligature. When the condition of the patient warrants, it is advisable to allow from 10 to 15 ounces of blood to escape before the introduction of salt solution is begun. The amount of blood withdrawn in the author's cases ranged from 15 to 32 ounces; the salt solution introduced, from 1 to 2 quarts.

This treatment was used in 10 cases, 7 puerperal, 2 of convulsions in chronic nephritis and 1 of subacute nephritis, with the result that in each case the convulsions ceased at once and did not reappear. In the 3 eclamptic cases which the author reports in detail, no other treatment was employed except a dose of salts every morning, and a hot vapor bath once daily for a week. The same treatment was employed in the other 7 cases, varying only in the amount of blood withdrawn and salt solution introduced. In this the condition of the pulse was taken as a guide; at the first sign of weakness while the blood was escaping, the infusion of salt solution was begun.

As to the indications for the method, the author believes that while in many cases in which convulsions appear after seven months of gestation and positively in all cases after eight months, in which other means do not relieve promptly, vaginal Cæsarean section, manual or instrumental dilatation, with rapid delivery, should be practised; yet, if the venesection-infusion method is employed first, Nature, with a little assistance in the way of hot packs, hydragogue cathartics, milk

diet, rest, etc., will, in most cases, do the rest. Thus, if for any reason as lack of an assistant or necessary instruments, delivery must be delayed, the method can be employed not only with the hope of benefit, but to improve the patient's chances in undergoing the graver operation. In the expectant treatment of eclampsia the author thinks the infusion method superior to veratrum viride in that it promotes diuresis and diaphoresis, and, though stopping the convulsions, tends rather to stimulate the heart and vasomotor mechanism than depress them. —*Monthly Cyclopædia & Medical Bulletin.*

Resuscitation of a Still-born Child Two Hours after Birth.

EDITH URB. M.B.—The writer was called by a trained nurse to a case in which the head was born and the shoulders had become jammed, and the cord was tightly around the neck and could not be loosened. She arrived 40 minutes after and was told that the child was born shortly after the nurse had been sent and was dead, that it had never breathed in spite of all the usual remedies. The child was quite limp, very pale, and no heart-beats could be detected. For the sake of doing something, the writer applied mouth to mouth respiration. To her astonishment the child's colour improved, and in 10 minutes the heart could be felt slowly and feebly beating. This increased in frequency and intensity, and 1 hour 10 min. after she arrived (2 hours after birth) the baby gasped. The writer persevered for nearly another hour, the child then giving two noisy inspirations in quick succession every 15 seconds or so. The child lived 10 hours after this.—*The Medical Review.*

Saline Infusion in Eclampsia.

A. K. ARMSTRONG, M.R.C.S.—A poorly nourished woman, aged 34, had previously four normal confinements. Her present confinement at 8 months occurred before the arrival of the midwife, who noticed nothing abnormal, and after attending to the mother and child left. Five hours later the patient was seized with convulsions. When seen by the writer she was unconscious, pale, the pulse imperceptible, the heart-beats irregular in force and frequency, but very rapid, about 200 per minute; the extremities cold and flaccid, and the respiration irregular and stertorous. At intervals of from 5 to 10 minutes she developed convulsions. They commenced with a tonic stage, during which the face became cyanosed, the limbs rigid and hands tightly clenched, and blood oozed from the

vagina. A clonic stage followed; the duration of the whole fit was about 5 minutes. Hot water bottles were placed at her feet, and normal saline solution was infused at the rate of about 2 pints per hour into the subcutaneous tissue of the axillæ and thighs, the total amount infused being 4 pints. During the infusion she gradually improved. She had one or two more fits, but these became much less severe. When the infusion was stopped she became conscious, though very drowsy, her respirations quieter and more regular, the pulse steady and beating at the rate of 90. There was no subsequent return of the fits. The urine after the infusion showed 3.5 per 1,000 of albumin.

The points of interest are the length of time after delivery before the onset of any symptoms—namely, 5 hours. When the infusion was commenced the patient was *in extremis*, and, if left to herself, must have soon died. She ultimately made a satisfactory recovery.—*The Medical Review*.

THERAPEUTICS.

The Ipecacuanha Treatment in Liver Abscess.

BY

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I was surprised upon reading the discussion of the treatment of hepatitis by ipecac. in the September number of the *I. M. G.* to see that nothing definite was said with regard to the effect of ipecac. when an abscess has actually formed in the liver.

Now from cases of my own I have not the least doubt that ipecac. is also very useful when an abscess has actually occurred.

About two years ago I had a case where there was distinct fluctuation below the ribs and intense pain in the same region.

After giving a dose of 20 grains of pulv. ipecac. there was so much relief of pain that I determined to persevere with this treatment and delay operation. In three or four days the abscess had very much diminished, and in about a fortnight the liver could hardly be palpated below the ribs.

I unfortunately did not make a puncture, as I did not at the time think it necessary, there being no room for doubt as to the presence of abundant pus.

Although three or four years ago we used to have as many as seven or eight liver abscesses in the month on occasions, we have had comparatively few of late. With one exception I have found them yield at

face to ipecac. The one exception was in a woman where there was so much bulging in the back and side that I thought it advisable to remove a portion of a rib, and drain the abscess. Several pints of pus were taken out. I, however, kept her under the influence of ipecac. both before and after the operation, and found that in consequence the abscess dried up in a remarkably short time, while many similar cases which I had operated on before had died.

About a fortnight ago, however, I had a case which enabled me to absolutely prove the effects of ipecac. in curing liver abscess.

Bhusan, aged 18, a Hindu, was admitted, having suffered for about eighteen days from a swelling and pain in the right hypochondriac and epigastric regions. On examination the swelling was found to be due to enlargement of the liver, which felt hard and bulging, and pitted on pressure. There was a slight rise of temperature in the evening, and the leucocyte count was between 35,000 and 40,000.

On exploring with a needle, pus was found and four or five drops extracted, which on microscopic examination showed numerous amœbæ. A powder containing Pulv. Ipecac. grs. xx, Acid Tannic grs. x, Calomel gr. i was given twice a day for four days. After the first day the pain had entirely gone. After the second the pitting on pressure over the liver had gone, while the swelling was very much lessened. Since then the ipecac. treatment has been continued and the swelling has gradually disappeared.

From these and many similar cases I am persuaded that it should very seldom be necessary to operate on amœboid liver abscesses and that, where it is considered necessary, persistence in the ipecac. treatment will take away from the danger which is often consequent on such an operation.

I have also found ipecac. almost invariably successful in cases of dysentery here and combining it with Tannic Acid, which counteracts the vomiting and other bad effects. I use it constantly even in dispensary practice. I have also found ipecac. most useful in another complication of dysentery which is not at all uncommon here, *viz.*, a condition where the mesenteric glands are enlarged, and there is a generally matting of the intestines causing a hard tumour most frequently in the lower part of the abdomen, with intense agony upon the least peristalsis of the bowel. Such tumours, when consequent on chronic dysentery, I have found to melt away as if by magic under ipecac.

Ipecac. is also most useful in cases where the liver abscess has burst into the lung or even into the bowel.—*The I. M. G.*

Infections: Injection of Adrenalin in severe.

The author administered large quantities of adrenalin in desperate cases of pneumonia, diphtheria, and scarlet fever, and claims to have obtained excellent results. Amounts up to 10 and even 24 mgms. (2/13 and 5/13 grain) daily were injected subcutaneously in divided doses of 1 mgm. (1/65 grain) every one or two hours. A 1:1000 solution of adrenalin was used. Some patients already in a state of collapse were in this way revived and placed on the road to recovery.—*Monthly Cyclopaedia & Medical Bulletin*.

Treatment of Morphine and Other Drug Habits.

P. SOLLIER.—By the following method the writer has successfully treated during the last 20 years 357 cases of the morphine, heroin, or cocaine habit. The patient is first subjected to a period of preparation lasting from 5 to 8 days, according to the severity of the case. During this period the quantity of the drug is reduced, and if cocaine is used in addition to morphine it should be suppressed. When the heroin habit is present, this drug should be replaced by morphine in larger dose. At the same time it is necessary to establish free elimination, especially by the bowel. The patient is purged daily by the administration of calomel followed by Seidlitz water. Elimination by the skin must be stimulated by the use of hot douche or light baths, while a dose of pilocarpine may also be given. Free diuresis should also be established. Having assured the free working of the excretory apparatus, the drug may be abruptly stopped. The malaise experienced is largely situated in the muscles, and is reduced to a minimum by this method of treatment. It may persist for 24 to 30 hours, and is relieved by frequent hot baths of short duration. During this period the Seidlitz water is continued in doses sufficient to secure an action of the bowels every 4 hours, and must be given morning and evening for the two days following the discontinuance of the drug. All desire for morphine ceases after 24 hours, and the more free the evacuation the less the patient suffers. During the following 10 days the elimination of the drug is aided by baths and a daily dose of Seidlitz water. The patient is kept in bed from the commencement of the preparatory period. On the day on which the drug is discontinued he is allowed citric lemonade, and later coffee, when this can be taken. During the following week food is gradually increased. The loss of weight is chiefly due to the evacuation of water from the body, and is rapidly regained after the first week, when the appetite returns. The

patient now exhibits such a voracious appetite, with rapid digestion, that he can consume several large meals daily, and increase in weight at the rate of 2 to 3 or even 5 kgm. per week. During this period the system still contains morphine, and free elimination by the liver, intestine, and skin must be maintained. Failure of excretion causes malaise, which produces a return of the desire for morphine. The activity of the genital glands returns about the 15th to 20th day. While baths suffice for the stimulation of the skin, the liver should be acted on by a dose of calomel from time to time, and Seidlitz water should be given daily for 20 days, then every 3 or 4 days, or when any defect of intestinal action indicates its use. The purgation is well tolerated; patients feel better under it, while it disturbs neither appetite nor digestion.

The writer insists on the importance of forbidding substitutes, analgesics or hypnotics, during the treatment of morphine habit. The administration of such substances as trional or sulphonal even in small doses is dangerous to patients recently freed from the abuse of morphine, as they produce a state of hebetude which resembles general paralysis. This method reduces to a minimum the dangers and discomforts of the treatment of the morphine habit, while it gives results which are at once rapid and lasting, and, when properly carried out, should always prove successful.—*The Medical Review*.

OPHTHALMOLOGY.**The Abortive Treatment of Beginning Cataract.**

By

DR. LOUIS DOK.

The medical treatment of cataract had fallen into desuetude when BADAL advised instillations and bathing of the eyes with a 3 per cent. solution of potassium iodide. Since then BADAL'S method has been tried by everybody, but with very different results. For some this treatment is efficacious, for others it is very doubtful. VON PFLUGK (Dresden) has spoken in German in favor of this treatment, and at the last ophthalmologic congress at Heidelberg, occasioned by a communication by ROHMER, he has repeated that he is very well satisfied with the results. I was present when he made this statement and I noticed that his remarks were received by slight disapproving murmurs. Near me a voice whispered: "He is right"; at once other voices said: "What, you too?" and the discussion continued. He said: "I am absolutely certain that I have arrested some cataracts"; the answer was:

"There are a good many cataracts which spontaneously remain stationary." When silence again reigned, every one seemed to retain his own standpoint.

At the hotel in the evening I talked about BADAL'S method with one of the five French oculists who had come to Heidelberg. This was my sympathetic colleague, DR. CHEVALLEREAU, and he said that in his experience the iodide of potassium treatment was decidedly efficient. But here (at Lyon) two of my colleagues have told me that they have given up this method, since they saw only very doubtful results from its use. Thus opinions differ.

If a vote were taken among oculists I believe the unfavourable opinions would outnumber the favorable ones.

My own opinion is that the method as recommended by its author is of a certain value, but that is not sufficient in the majority of cases.

From a consideration of the pathogeny of cataract I have modified BADAL'S technique, and the results which in three years I have observed are such that I am not afraid to speak of the cure of some cases, of the improvement in the majority of them, and of the remaining *in statu quo* in the others, and of a failure in a very small proportion only of the cases.

My experiments were based on the well founded opinion that cataract is produced by a ferment which passes into the aqueous humor while it should remain in the blood. This ferment, which is hydrating, causes the hydration of the albumens in the lens. I have shown all this in my article in the *Encyclopedie Francaise d' Ophthalmologie*.

The aim of the therapeusis is to annihilate this ferment. Yet ferments differ very much from each other. Some are made active by the presence of a chemical substance and others are rendered inactive by this same substance; we cannot foretell what the action of a certain substance will be on a certain ferment; this must be found out by experimentation. I have, therefore, made a list of some substances which inhibit the fermentative actions in general and I have tried, one after the other, the handiest of these. I have tried potassium iodide, sodium iodide, chloride of calcium and magnesium, phenic acid, resorcine, sodium salicylate, sodium borate, and lithium benzoate. I found some patients who knew they were making therapeutic experiments and were willing to do it. They bathed one eye in the iodide of potassium solution recommended by BADAL and the other in another solution. Trials with sodium borate were not encouraging; those with lithium benzoate and sodium salicylate

were doubtful; those with resorcine were decidedly favorable (especially a salve of 0.1 gr. to 20 gr. of lanoline and 2 gr. of water); magnesium chloride seemed to act in certain cases only; but the best results, and much superior to those produced by potassium iodide, were obtained by a mixture of sodium iodide and calcium chloride in the following proportions:—

Sodium iodide (well dried)	.. 5 grammes.
Calcium chloride (crystalized)	.. 5 grammes.
Distilled water	.. 400 grammes.

With this solution we can arrest at least eight cataracts out of 10, heal one, and experience a failure in the tenth case only.

When I speak of healing a cataract I, of course, allude only to such cataracts which are in the earliest beginning and which still have $V = 1/2$.

At the end of two months of treatment $V = 1$ and the patients have again a presbyopia corresponding pretty exactly to their age, while in all cases of cataract in evolution the presbyopia is greater than the age would call for. Not all of the few striæ observed in the periphery of the lens disappear, but no new ones are formed. Probably only those fibres become again normal which were not yet visibly opacified. They were swollen and their refraction was modified. I speak of these fibres and of their restoration when I speak of the healing of a cataract.

In the great majority of the cases the patients' vision is already smaller than $1/4$ when they consult us; such patients easily recover $V = 1/2$ but this does not easily reach 1. In these cases, therefore, we can speak of an improvement only and not of a cure. In some cases the treatment seemed to simply arrest the affection and no improvement in vision could be demonstrated. In such cases we have good reason to suspect a stationary or even perhaps a congenital form of cataract. The failures will be observed in the cases of cataract due to diabetes or intestinal intoxication or with detachment of the retina and pigmentary retinitis. In these cases, in spite of the admirable persistence of the patients, I have obtained no results.

I have now treated fifty patients by bathing the eyes with my solution; five have been cured for two years and have stopped all treatment. They can read with ease and are enchanted. They have recovered normal vision in both eyes.

About forty of them come to see me from time to time, interrupting and resuming the treatment. Nearly all of these say that the treatment

has benefitted them greatly and they are sure they can read and work with much greater ease than before. I said *nearly* all of these, because an exception is made by a few of these patients who had probably a stationary or congenital form of cataract. With them neither an improvement nor a retrogression has been noted. I have advised five patients to stop the treatment because, in spite of their absolute willingness to treat their eyes regularly, their vision grew worse.

I must now state the little trick which I employed in order to get the results which I here announce.

This little trick consists in covering the edge of the eyecups which are used for the eyebaths with a rubber rim. I had some eyecups with such a rim made here at Lyon by Lepine (Place des Terraux) and by Lafay. (16, rue de la Barre) and I consider this precaution as indispensable. The bath should in fact be very prolonged. The patients should bathe each eye for half an hour each day. When the eyecup has no rubber rim the patient either does not press the cup sufficiently hard against the eye and the fluid runs out and the bath is insufficient, or he presses too hard and in consequence suffers sufficiently from this pressure to reduce the time of the bath.

It is, therefore, necessary to direct the patients to have eyecups with a rubber rim, and, furthermore, to warm in a porcelain dish the quantity of the solution necessary to fill the eyecup. When the liquid is warm it is poured into the eyecup and the treatment is begun. It is unnecessary to wink the eye in the bath, since the point is not to get the fluid into the lacrimal passages, but to get results by means of osmosis through the cornea. When dealing with somewhat delicate patients it is best to recommend to them to warm the liquid again at the end of the first quarter hour. Some patients say that the solution pricks or burns them. There is then always an impurity of the iodide or chloride present. If some metallic iodine is liberated the caustic action of this liquid interferes with the healing and discourages the patients. The solution must be made from very pure salts, recently crystalized and kept from light and moisture.

The solution when well prepared is absolutely non-irritant. The treatment must last several months without interruption, on an average from three to six months, then a few months of rest are followed by a repetition of the treatment.

The results I have obtained have seemed to me to be so markedly superior to those obtained with potassium iodide, that I feel that

I render a great service to my colleagues and their patients by communicating to them my formula and the method of using it. It would be superfluous to publish my cases in detail. What interests the practitioner are the conclusions. Let every one try in his own sphere, perhaps, to find a formula even better than mine.

In conclusion I want to add that my formula should also be recommended to all patients with acquired lens myopia, and to all who are more presbyopic than their age warrants. Both of these conditions are often premonitory symptoms of cataract.

Of course, I do not count the patients whom I have treated and cured from these conditions, as having been cataract patients.

The patients of whom I spoke above had the plain ophthalmoscopic signs of beginning cataract and a diminished visual acuity. I mention that these signs must be looked for downwards and with the mirror alone. Sometimes it is necessary to instill atropine.

We can almost promise an improvement to all patients with $V=0.2$; those who have $V=0.5$ and formerly had 1.0 can almost always regain this latter acuity.

When the patients are tired of the eyebaths, they may be given the resorcline salve of which I have given the formula and which is put into the eye on retiring. When I tried to use this salve with my solution I found this to be a mistake and I have not continued it. I grant an indisputable action to BADAL'S solution of potassium iodide, but I consider it inferior to that of my mixture.—*The American Journal of Ophthalmology.*

TOXICOLOGY.

Cocaine Poisoning.

THE *Veterinary Record* publishes the summary of an article which appeared in the *Berliner Tier Woch*, from the pen of PELZ of Leipzig, relative to the use of ESMARCH'S bandage as a precaution against cocaine poisoning. This observer, working on rabbits, confirms KOHLHARDT'S results as regards the efficiency of the bandage, but explains its action differently. The latter observer infers that the tissues which are detached from the circulation exercise a special influence upon the cocaine to lessen its activity. PELZ, however, believes that the action of the ligature is explained by altered conditions of absorption, by the formation with the tissues of cocaine compounds, and by the affinity of the erythrocytes for cocaine. He summarises his results as follows: (1) Care should always be exercised in the use of cocaine, for even small

doses exert a toxic action. The drug causes venous congestion in the abdominal cavity, and anæmia of all other vascular areas. It is possible that the alterations of the red blood discs within the vessels from the action of the drug may be harmful. (2) The simultaneous application of cocaine to various parts of the body should be avoided. (3) ESMARCH'S bandage prevents general intoxication by cocaine more certainly than the simultaneous use of adrenalin, especially if the cocaine is injected into the deeper-lying tissues, and care be taken to adjust the bandage properly. (4) In cases where the bandage is inapplicable, either general narcosis or a less dangerous local anæsthetic, such as alypin, should be used. This conclusion, again, is especially applicable in the case of the deeper-lying structures.—*The Hospital*.

Cases and Comments.

A Boy with Hypospadias Mistaken for a Girl and Married accordingly.

By

DR. A. LAKSHMIPATHI, B. A., M. B. & C. M., MADRAS.

The individual is a Brahmin aged 12 years. He was dressed as a girl when he was brought to me for examination on 20-5-1911. He had the usual ornaments put on by girls in these parts. The general appearance is graceful and delicate. The tone is feminine.

Complaint.

A month ago the patient had an attack of pain in the right groin and right half of scrotum. This pain lasted for a week. The lady apothecary who examined the child at that time told the parents that the child had two abnormal testicles which she advised to be removed by operation. The child is therefore brought to Madras for operation.

Examination.

There is an imperforate and stunted penis three quarters of an inch long, with a groove on its under surface intended for the urethra. The two halves of the scrotum remained ununited, leaving a superficial groove in the middle line which was mistaken for the vagina. In the posterior aspect of this groove is an oblique aperture running



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Original Articles.

* THE ARSENICAL TREATMENT OF SYPHILIS, WITH SPECIAL REFERENCE TO ARSENO-BENZOL (SALVARSAN, or "606").

BY

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ARSENIC has long been used as an auxiliary drug in the treatment of syphilis, chiefly in the form of Donovan's Solution, containing arsenious and mercuric iodides. In recent years, however, attempts have been made to exalt the therapeutic status of arsenic to that of an alternative drug to mercury, or even a substitute for it. With this object in view, several organic preparations have been invented which are said to contain higher percentages of arsenic than the inorganic preparations, and at the same time to be less toxic than the latter. In other words, it is claimed that larger quantities of arsenic can be administered with safety in this way.

The first of these organic preparations of arsenic was *atoxyl*. This drug, although it has only recently come into notice, appears to have been introduced by a French chemist, BECHAMP, more than 50 years ago. It was used in skin affections, but abandoned owing to the toxic effects of impurities, which sometimes caused blindness. It was reintroduced when it was found to have a destructive effect on trypanosomes, and was hence used in sleeping sickness. It was tried afterwards in syphilis when the pathogenic micro-organism of this disease was found to be a protozoon, the *spirochaeta pallida*, and therefore allied to the trypanosomes. However, history repeats itself, for atoxyl has again been abandoned on ac-

• Specially contributed to *The Antiseptic*.

vessel was excluded). Hæmorrhagic ascites has proved very fatal, doubtless due to infection by organisms.

The term purpura includes a collection of hæmorrhagic diseases. Some are traceable to streptococcal infection, especially when a complication of puerperal fever. Melæna neonatorum forms another class of fatal hæmorrhagic disease. Among the organisms identified are not only streptococci, but also *Bacillus Pyocyaneus*, staphylococci, short bacilli and Friedlander's pneumo-bacillus. KLEBS in 1875 found a micrococcus in 9 new-born children who had died of melæna, the cultivation of which produced in young rabbits fatal hæmorrhagic lesions. In 3 cases reported Tizzoni and Giovanni, children of the same family, died of a contagious pustular impetigo accompanied by hæmorrhage. *Staphylococcus pyogenes aureus* was found in both primary and secondary lesions. The hæmorrhages were traced by microscopic examination to thrombosis of the smaller vessels by the staphylococci. The acute hæmorrhages which complicate diphtheria of the fauces are very fatal.

Acute hæmorrhages into the stomach as shown by black vomit constitute a grave complication of the specific and tropical fevers. In surgical practice they occur late in such cases as intestinal obstruction, gall-bladder suppuration, and gangrenous appendicitis, and may follow operations when sepsis cannot be prevented.

Dr. F. W. ANDREWS has published the following case of muscular hæmorrhage following typhoid fever:—

A man, aged 18, the subject of double chronic otitis media, was admitted to St. Bartholomew's Hospital during the third week of an attack of typhoid fever. Before the temperature became normal he had a relapse, and died on the fifty-second day. On the day before death subcutaneous hæmorrhages appeared on the feet and elsewhere; in addition there formed a considerable swelling in the left thigh with œdema of the limb below. Post mortem, in addition to the lesions characteristic of typhoid fever, there was found a diffuse extravasation of blood into the muscles. From the muscles of the thigh and from the blood-clot a pure cultivation of streptococci was obtained, but no typhoid bacilli. The streptococci were not evenly distributed in the muscles, but had especially collected about the arteries and veins. Of leucocytic aggregation there was little or no evidence. Hæmorrhages may be produced by poisons such as phosphorus and benzene.

HÆMORRHAGIC CELLULITIS.

In the following cases of acute hæmorrhagic cellulitis on incision no distinguishable pus escaped, but blood poured out freely.

Hæmorrhagic Cellulitis of the Arm.—A previously healthy man, aged 25, had an extensive swelling of the arm and forearm, which had followed a slight abrasion of the hand. The subcutaneous tissue of the arm and forearm seemed to be distended by pus. But on incision blood-clot escaped, then fluid blood poured out, and alarming signs of acute anæmia developed. No single vessel could be seen to bleed, although incisions were extended along the line of the blood vessels. Only by very firm packing of every part of the involved area, followed by bandaging, was the bleeding controlled. The exposed tissue soon became covered by granulations, and healing followed.

Acute Hæmorrhagic Cellulitis of the Left Buttock and Thigh.—A labourer, aged 47, was admitted in a weak state and with lemon-coloured pallor. He had been ill for 6 weeks without evidence as to cause. A deep-seated elastic resistance filled the left iliac fossa, the left buttock, and upper third of the thigh. In the thigh the swelling was more superficial, and the skin over it showed a dusky brown brawny œdema. The circulation in the left leg and foot was as good as on the opposite side. The pulse was 152, the respiration 40, and the temperature 100·4. Impressed by his pallor, which he took to indicate concealed hæmorrhage, the writer made a narrow puncture with a knife in four places into the swollen thigh, keeping well away from any vessel. From each puncture bright blood poured out and quickly clotted. No pus was reached. Each puncture was plugged firmly with gauze. He would soon have bled to death, had any freer incision been made or a drainage tube been inserted. A diplococcus was cultivated from the blood which escaped. At each dressing clots of blood with turbid serum escaped, but no pus. The swelling diminished, but the man became weaker, his temperature rose to 104°, his pulse to 172, and he died 3 weeks after the incision. No necropsy was allowed, but the nature of the case was confirmed by the infection of 2 patients in neighbouring beds with erysipelas.

Hæmorrhagic Cellulitis round the Knee.—A carpenter, aged 27, was admitted. A month before he felt on returning home one night great pain in the right knee. He therefore rubbed in horse oils and turpentine. Then the knee was poulticed for a fortnight. A week before admission a discharge commenced, and the swelling began to spread down the leg and up the thigh. On admission he was very pale, weak and half delirious. On incision a little pus, but chiefly broken-down blood-clot, escaped, so that it was impossible to irrigate the cavities. Compared with the previous cases, blood did not pour out, but only re-collected in the cavity as clot. There was no sign of an arterial lesion or of disease

Puerperal Eclampsia : Treatment.

The author reports the results obtained with a plan of treatment having for its purpose rapid elimination of a part of the toxins responsible for the eclamptic symptoms and mitigation of the effects of the remainder by dilution of the blood. To accomplish this he combines venesection with intravenous infusion of normal salt solution. The skin of the arm is cleansed, a constricting band applied, and any prominent superficial vein, preferably the median basilic, exposed. Two ligatures are tied around the vein with a single knot, from $\frac{1}{4}$ to $\frac{1}{2}$ inch apart, the vein divided half way through its circumference, and two thin-walled glass cannulæ inserted successively on either side of the opening, one cannula pointing distally, the other (that for the salt solution) proximally. The cannulæ being tied in by means of the ligatures, the desired amount of blood is allowed to escape and a sufficient quantity of salt solution introduced. The cannulæ are then withdrawn and the vein obliterated by tying the two ligatures. In emergencies a fountain syringe with the glass tube of an ordinary medicine dropper may be used to convey the salt solution into the vein, and the blood allowed to escape by simply loosening the distal ligature. When the condition of the patient warrants, it is advisable to allow from 10 to 15 ounces of blood to escape before the introduction of salt solution is begun. The amount of blood withdrawn in the author's cases ranged from 15 to 32 ounces; the salt solution introduced, from 1 to 2 quarts.

This treatment was used in 10 cases, 7 puerperal, 2 of convulsions in chronic nephritis and 1 of subacute nephritis, with the result that in each case the convulsions ceased at once and did not reappear. In the 3 eclamptic cases which the author reports in detail, no other treatment was employed except a dose of salts every morning, and a hot vapor bath once daily for a week. The same treatment was employed in the other 7 cases, varying only in the amount of blood withdrawn and salt solution introduced. In this the condition of the pulse was taken as a guide; at the first sign of weakness while the blood was escaping, the infusion of salt solution was begun.

As to the indications for the method, the author believes that while in many cases in which convulsions appear after seven months of gestation and positively in all cases after eight months, in which other means do not relieve promptly, vaginal Cæsarean section, manual or instrumental dilatation, with rapid delivery, should be practised; yet, if the venesection-infusion method is employed first, Nature, with a little assistance in the way of hot packs, hydragogue cathartics, milk

diet, rest, etc., will, in most cases, do the rest. Thus, if for any reason as lack of an assistant or necessary instruments, delivery must be delayed, the method can be employed not only with the hope of benefit, but to improve the patient's chances in undergoing the graver operation. In the expectant treatment of eclampsia the author thinks the infusion method superior to veratrum viride in that it promotes diuresis and diaphoresis, and, though stopping the convulsions, tends rather to stimulate the heart and vasomotor mechanism than depress them. —*Monthly Cyclopædia & Medical Bulletin.*

Resuscitation of a Still-born Child Two Hours after Birth.

EDITH URB. M.B.—The writer was called by a trained nurse to a case in which the head was born and the shoulders had become jammed, and the cord was tightly around the neck and could not be loosened. She arrived 40 minutes after and was told that the child was born shortly after the nurse had been sent and was dead, that it had never breathed in spite of all the usual remedies. The child was quite limp, very pale, and no heart-beats could be detected. For the sake of doing something, the writer applied mouth to mouth respiration. To her astonishment the child's colour improved, and in 10 minutes the heart could be felt slowly and feebly beating. This increased in frequency and intensity, and 1 hour 10 min. after she arrived (2 hours after birth) the baby gasped. The writer persevered for nearly another hour, the child then giving two noisy inspirations in quick succession every 15 seconds or so. The child lived 10 hours after this.—*The Medical Review.*

Saline Infusion in Eclampsia.

A. K. ARMSTRONG, M.R.C.S.—A poorly nourished woman, aged 34, had previously four normal confinements. Her present confinement at 8 months occurred before the arrival of the midwife, who noticed nothing abnormal, and after attending to the mother and child left. Five hours later the patient was seized with convulsions. When seen by the writer she was unconscious, pale, the pulse imperceptible, the heart-beats irregular in force and frequency, but very rapid, about 200 per minute; the extremities cold and flaccid, and the respiration irregular and stertorous. At intervals of from 5 to 10 minutes she developed convulsions. They commenced with a tonic stage, during which the face became cyanosed, the limbs rigid and hands tightly clenched, and blood oozed from the

count of the numerous cases of optic atrophy which have resulted from its use, both in sleeping sickness and in syphilis. It may be mentioned, by the way, that atoxyl and *soamin* are only trade names for the same drug—sodium-paramino-phenyl-arsanate.

Atoxyl was succeeded by *arsacetin* (sodium-acetyl-paramino-phenyl-arsenate), which was said to be free from the danger of causing optic atrophy. This statement, however, is proved to be false, for several cases of optic atrophy have resulted from the use of *arsacetin*. Hence, this drug has shared the fate of atoxyl.

Another preparation, introduced by BULZER and MOUNEYRAT, under the name of *hectine* (sodium-benzol-sulpho-paraamino phenyl-arsanate), has so far escaped the opprobrium which led to the abandonment of the other two drugs. *Hectine* is said to have a healing effect on syphilitic lesions, and some observers go so far as to claim that an abortive cure of the disease can be attained by daily injections of the drug for 30 days, underneath and in the neighbourhood of the chancre, provided the latter is not more than 20 days old. However, as we shall see later on, this assumption is unwarranted.

More recently two other preparations of arsenic have been introduced by EHRLICH. The first of these is *arseno-phenyl-glycin*, which is said to have a curative effect on the dourine of horses and on syphilis in apes. This drug, however, was soon superseded by *dioxy-diamido-arseno-benzol*, generally known as the Ehrlich-Hata preparation, after EHRLICH and his co-worker HATA, a Japanese doctor. It has also received the euphonious pseudonym of "606", because it is said that EHRLICH made 605 other preparations before obtaining the desired result.

It is to be regretted that this preparation has been boomed and advertised with a flourish of trumpets more in accordance with the methods of commercial enterprise than those of scientific medicine. It has even been patented, and is sold by an enterprising firm of chemists under the name of "Salvarsan," at the exorbitant price of 10 shillings a dose. However, as its inventor is one who holds a high position in the scientific world, it is necessary to deal with this preparation on its merits.

NEISSER experimented on apes with atoxyl, *arsacetin*, *arseno-phenyl-glycin* and *arseno-benzol* ("606"), and came to the conclusion, that these drugs had both a preventive and a curative effect on the experimental syphilis of these animals. Injection of the drugs a few days after inoculation with syphilitic virus appeared to prevent the development of syphilitic symptoms; hence the preventive action of

these drugs was assumed. The curative effect was said to be proved by the fact that syphilitic apes, after treatment with these drugs, could be successfully reinoculated with syphilis.

Although it is possible that these results may be true for the experimental syphilis of apes, they do not hold good for human syphilis. It has been shown that immunity in syphilis is only complete during the secondary period, that it is incomplete during the primary period, and gradually weakens during the tertiary period. A patient can be reinoculated with syphilis during the primary period (up to 30 days after the first appearance of the chancre) and also during the tertiary period. The fact of positive reinoculation, therefore, is no proof that the original infection is extinct.

Whether these drugs have a preventive action on syphilis cannot be determined in the human subject in the same way as NEISSER claims to have proved it for apes, for experimental inoculation of human beings with syphilis is unjustifiable, and infection in the usual way is not apparent till the chancre develops. However, it was hoped by the more enthusiastic observers that the disease might be aborted by means of these arsenical preparations, by injecting the drug as soon as possible after the first appearance of the chancre. Most of such attempts have failed. In any case an abortive cure is difficult to prove in the human subject, owing to the long latent periods that may elapse before tertiary symptoms develop. As already mentioned, the fact of reinfection with syphilis is no proof of the original infection being cured.

We may be told that a persistently negative WASSERMANN reaction is proof of a cure, but considering our ignorance of the real nature of this reaction and the knowledge that it is not specific for syphilis, this evidence cannot be regarded as scientifically conclusive. A positive WASSERMANN reaction is given, not only by other protozoal diseases such as trypanosomiasis and yaws, but also by leprosy, which is not a protozoal disease. Another unexplained fact is that in general paralysis, which is not a manifestation of active syphilis, the proportion of positive WASSERMANN reactions is greater than in cases of syphilis at the height of their activity. Taking all these facts into consideration, it would appear that further knowledge of this reaction is required before it can be accepted as an arbitrary test.

We now come to the question of the therapeutic value of these arsenical preparations, with special reference to *arseno-benzol*, or 606. Can such preparations replace mercury and iodides in the treatment of syphilis, and, if not, are they of use as a third or auxiliary drug?

If any drug is to replace mercury or iodides in the treatment of syphilis it must be proved capable of producing one of the following effects:—

1. The realisation of an abortive cure of the disease.
2. The prevention of tertiary and parasyphilitic manifestations.
3. The healing of primary, secondary and tertiary syphilitic lesions with greater rapidity, greater constancy, and, at the same time, with less liability to relapse than is the case with mercury and iodides.

It must also compare favourably with the latter as regards toxic effects.

Let us see whether "606" or any other arsenical preparation fulfils any of these conditions.

1. As regards an abortive cure, we have already seen that it is impossible to prove that this can be effected by any drug, at any rate in the human subject. Moreover, if an abortive cure is possible, it might be effected by mercury.

2. The prevention of tertiary and parasyphilitic manifestations can only be proved after the lapse of many years, so that it cannot be proved for any of the new arsenical preparations. On the other hand, so far as statistics can prove anything, it has been proved for mercury by the observations of Professor FOURNIER, who found that the predominant factor in the antecedents of cases of tertiary syphilis and parasyphilis was insufficient mercurial treatment, or absence thereof.

3. With regard to rapidity of action, the earlier observers, carried away by their enthusiasm for the new drug. "606," described the rapidity of resolution of syphilitic lesions (mostly, by the way, chancres and secondary eruptions) as "marvellous," "miraculous," etc. They appear to have forgotten that it is quite a common thing for such lesions to undergo resolution with "marvellous" rapidity under mercurial treatment, especially by inunction.

More recent and more level headed observers, such as GAUCHER and GOTTHEIL, have found that some lesions heal at about the same rate as under mercurial treatment, others more rapidly; but these are mostly superficial ulcers and mucous patches which can be easily healed by mercury.

As regards constancy of action, the above observers found that some cases did not improve at all under treatment by "606". GAUCHER states that it has no action on visceral syphilis, nor on parasyphilitic affections such as tabes, general paralysis and leukoplakia.

With regard to relapses, the earlier observers did not mention them, for the simple reason that they published their cases before the relapses had time to occur. Soon, however, relapses were frequently noted, but it was attempted to explain these away by insufficiency of the dose. Later on, it was found that relapses are common after the average dose of 0.6 gramme. It was then said that relapses indicated the necessity for a second injection; but, if relapses occur after one injection, why not after two or more? On the other hand, cases which relapsed after injection of "606" have been shown to improve under mercurial treatment (LANE).

It appears, therefore, that the first part of our question must be replied to in the negative: arseno-benzol is incapable of replacing mercury and iodides in the treatment of syphilis.

The next point to consider is whether arseno-benzol is of use as an auxiliary drug. GAUCHER, as the result of a careful trial of this preparation at the St. Louis Hospital, Paris, came to the conclusion that the chief and perhaps only indication for "606" is in cases which fail to improve under mercury and iodides; but, as he truly remarks, such cases are very rare. In my experience there are very few cases of primary, secondary and tertiary syphilis which cannot be healed with judicious combinations and variations in mercurial and iodide treatment, and very few patients are intolerant of mercury. Failure is often due to the adoption of routine methods, and success is often obtained when the method is changed. One of the most rebellious and chronic cases of tertiary syphilis I ever had to do with was cured by small doses of iodide given in large quantities of hot water, after all the usual methods of mercurial and iodide treatment had failed. This case, which shows what can be done by varying the methods of administration of the usual drugs, would doubtless have been reported as a "miraculous" cure, had it been treated by injection of "606"!

Some recent writers, apparently re-organising the fact that Salvarsan has failed to fulfil its original expectations, are advocating combined treatment with salvarsan, mercury and iodides. Thus has "606" fallen from its high estate. Instead of posing as a drug which would oust mercury from its time-honoured position, it is asked to play the minor part of an auxiliary drug. If this is the only position Salvarsan is to occupy in the treatment of syphilis, I think it would be better to continue using DONOVAN'S and FOWLER'S Solution, than expose our patients to the many risks and dangers of injection with "606."

Toxic Effects.—Lastly, we come to the risks and dangers of Salvarsan. In the first place, several deaths have been recorded after injection with this preparation, some of which appear to have been directly due to its toxic effects, while others, if not directly attributable to the drug, were probably accelerated thereby. HUTCHINSON mentions the case of a young, healthy woman who nearly died after an intravenous injection of "606" which was administered for a primary chancre of the lip! Intravenous injection appears to be especially dangerous, and HUTCHINSON remarks that "the intravenous injection of '606', if adopted on any considerable scale, will be certainly followed by a number of deaths, directly the result of such injections." (MARTINDALE and WESTCOTT'S "*Salvarsan*", p. 56). Several infants have died after injection of "606" for congenital syphilis; the fatal issue in these cases being attributed to the sudden liberation of endotoxins caused by the destruction of large quantities of spirochaetes in the drug. This explanation is purely theoretical; it is more probable that death was due to the toxic effects of the drug or to shock caused by the pain of injection.

Secondly, although it has been confidently stated that "606" is free from the danger of causing optic atrophy, a calamity which caused atoxyl and arsacetin to be abandoned, it appears that two such cases have been actually reported (ISAAC: *Berlin Klinbooch*; Aug. 15, 1910).

Other toxic effects which have been recorded are changes in the central nervous system (HOWELL: *Proc. Royal Soc. of Medicine*, 1911) and irritation of the kidneys, causing haematuria and albuminuria (GORTHEIL: *Medical Record*, December 31, 1910). Necrosis of the glutei muscles at the seat of injection appears to be fairly common.

It may, of course, be argued that mercurial treatment is sometimes followed by dangerous toxic effects, or even by death. It is true that fatal cases of mercurial poisoning have occurred, but these have been mostly the result of injections of insoluble preparations, especially gray oil. Here it is the method which to be blamed, not the drug, for there are many other ways of administering mercury. The danger of insoluble injections applies both to mercury and to arsenic—a deposit of the drug in the tissues may suddenly give rise to severe and uncontrollable poisoning.

CONCLUSIONS.

1. In the present state of our knowledge there is no drug which can replace mercury and iodides in the treatment of syphilis.
2. The organic preparations of arsenic undoubtedly heal certain syphilitic lesions; but their effect is not constant and is often only temporary.

3. The administration of most of these arsenical preparations is attended with many risks and dangers; the only preparation which has not been followed by disastrous results being apparently *hectine*.

4. As to Salvarsan, or "606," even if it were free from dangerous toxic effects, its indications are few, if any; but the liability to such dangers renders it absolutely contra-indicated.

• THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

BY

D. N. MUDLIAR, M. R. C. S. (ENG.) L. R. C. P. (LOND.)

The subject I have chosen this time to write a few words upon, being too vast to enter into a full and detailed account, I am obliged to limit myself only to a brief description of the various points and views held at the present moment; but my chief object is to put before your readers some of the latest advances in the surgical treatment of Pulmonary Tuberculosis, a disease which is so prevalent and carries away such a large percentage of patients in our medical practice. Surgeons have long entertained hopes of curing Pulmonary Tuberculosis by radical means but, till now, their efforts unhappily have either been futile or have not been attended with any greater percentage of success than by medical means, and even now it is far from complete though a little progress has undoubtedly been made.

I cannot too strongly emphasise the importance of early diagnosis in the treatment, be it medical or surgical. When asked what is the most important thing in the treatment I should say "early diagnosis," since early diagnosis means early detection of the lesion and easier and more complete the cure, but unfortunately it is only too common with practitioners to overlook the early and more important signs till the classical symptoms of cough, expectoration, dyspnoea, loss of weight and strength, pyrexia, night sweats, hæmoptisis, clubbing of the fingers, &c., manifest themselves. Early diagnosis means saving a greater proportion of patients, and I hope all young practitioners will try and practise to detect the earliest signs of Pulmonary Tuberculosis, which will go such a long way in saving the lives of suffering humanity.

Without going further into these preliminary details, I wish to come back to the present subject—"The Surgical Treatment of Pulmonary Tuberculosis." By Pulmonary Tuberculosis I do not mean the acute

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varieties; it is the chronic form which for a time remains limited to the apex of the lung, and which, in certain cases, can be treated surgically. The acute forms such as pneumonic, broncho-pneumonic, acute miliary, and bronchitic, lie within the province of the physician.

The treatment can be subdivided into two, *viz* :—

1. Treatment in early stages.
2. Treatment in later stages.

As the treatment in the early stages is the latest development and as the treatment on the later stages is longer known to the surgeons, I would prefer to describe the latter first for which I hope to be excused. The question of radical treatment of Pulmonary Tuberculosis has been one of great anxiety in the minds of surgeons for over four centuries and has been also a subject of great discussion in the surgical literature. Even now, in these days of antiseptic surgery, the majority of operations on the lung for tuberculosis fail because of one or more of the following reasons:—

1. For want of early diagnosis the patient is probably too much exhausted and perhaps secondary infection has taken place.
2. Besides the lesion at the apex, there are others coexisting in the same lung or the other.
3. Cavities at the apex are badly situated for drainage.

However, from time to time, various surgeons have tried various measures and have left their records behind. As early as 1670 BLIGNEY reported a case of a cavity by an accidental sword-thrust and since then for nearly a century surgeons tried to cure pulmonary cavities by direct stabs of the thoracic parietes and the cavity wall with a certain amount of success.

DE FOREST WILLARD in 1902 reported six cases of pulmonary tuberculosis in which the cavities were incised and drained, with four recoveries, but still the consensus of opinion amongst the surgeons at present is that cavities at the apex drain better into the bronchi than externally; hence incision and drainage is rarely resorted to in these days. The difficulties attending pneumectomy and the causes of its failure are the same as those above stated.

It has been supposed that the rigid non-yeilding thoracic wall which holds back the surface of the lung from falling in and prevents the coaptation of the walls of the pulmonary cavities, interferes with Nature's method of healing. On this hypothesis QUINCKE and others have

advised and practised removal of the ribs with varying success. For the same purpose rib-resection and induction of extra pleural pneumothorax, have also been practised, but all these operations have not gained general acceptance amongst the surgeons and will suit only a few cases.

On the same hypothesis MURPHY in 1898 advised and practised the induction of artificial pneumothorax by introducing pure and sterile Nitrogen Gas into the pleural cavity when the walls of the cavity fall in and the cavity becomes gradually obliterated. Personally I know of some cases where surgeons have induced pneumothorax and succeeded in obliterating the cavity. Hence in my opinion a certain amount of weight can be attached to this method of treatment and in suitable cases, if other measures fail, a trial may be given. Lastly I need hardly mention that in addition to the above treatment, general and personal hygiene of the patient are of equally great importance and must go hand in hand.

Treatment in the early stages is as much important as it is difficult, and various surgeons from time to time have held various views. Experimental evidence, which I need hardly describe, does not go to prove much. Attempts have also been made to explain the special proclivity of the apices of the lungs, in the anatomical changes of which I seek to give the following:—

1. Of the various channels by which the tubercle bacilli can gain admission to the lungs, the one *via* the cervical lymphatic glands, has been considered of no less importance to the surgeons, specially in children and young adults. Experiments on laboratory animals distinctly go to prove that the normal, healthy mucous membrane of the mouth, fauces and nose is quite capable of absorbing and transmitting the bacilli to the cervical lymphatic glands which these glands drain. Then still more will such pathological structures as enlarged tonsils, hypertrophied pharyngeal lymphoid ring, sore throat, carious tooth, adenoids, polypii, &c., be capable of doing so. Different pathological anatomists, also hold different views as to how this cervical tuberculous lymphadenitis can cause apical tuberculosis of the lung, of which the chief ones are—

(a) From the lymphatic glands the bacilli gain admission to the lymphatic and blood stream by the lymphatic trunks.

(b) From the cervical lymphatic glands the infection descends to the supraclavicular glands which infect the apex of the lung by direct contiguity.

(c) From the cervical glands, the infection passes to the tracheal and bronchial sets of glands whence it may enter the lymph and blood stream or suppurating glands may discharge their contents into a branch of the pulmonary artery by perforation producing a bacteræmia.

Post mortem we have evidence to show that in nearly 20 % of the cases of pulmonary tuberculosis, the cervical glands are enlarged. Hypertrophy of the tonsils in 5-6 % of the cases is purely tuberculous. There is a small percentage of cases in which the cervical glands are enlarged but when examined in stained sections, neither show the structure of a tubercle nor the presence of bacilli, but inoculation experiments into Guinea pigs are positive. This is what is called the "pretuberculous or lymphoid stage." Hence I would point out the importance of early treatment and removal of such lesions as adenitis, adenoids, enlarged tonsils, etc.

2. FREUND in 1859 emphasised the importance of symmetrical or asymmetrical stenosis of the upper thoracic aperture, which he thought was due to the shortening of the first rib and consequent deficient aeration of the apex of the lung and its proneness to infection, and since then this new discovery has stirred up the curiosity and craving of the surgeons and morbid-anatomists, to explain the apical lesion on anatomical basis. According to FREUND'S view, if there be shortening of the first or second rib, the treatment is plain enough which will be described at the end of this paragraph.

Encouraged by the discovery of FREUND'S, SCHMORL and HART set to investigate independently into cases from the anatomical point of view, and the former drew attention to a furrow on the apex of the lung in a certain number of cases. HART holds a slightly different view and supposes that from puberty onwards the superior thoracic aperture alters in shape while during this process, the apex rises and comes to occupy the bend which has taken place in the head and neck of the first rib. When this alteration fails to occur the inlet of the thorax remains of the infantile type and consequent stenosis of the thoracic inlet.

ROTHSCHILD has attempted to show that a potent predisposing factor in apical tuberculosis is an exostosis at the junction of the gladiolus and manubrium sterni. There are no statistics unfortunately on this point, neither any confirmatory evidence but still the point is an interesting one from a surgical point of view.

Last year, in a paper read before the German Surgical Congress held at Berlin and to which I am indebted for the following information. It was mentioned that in a large proportion of cases of apical tubercu-

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losis, there is a premature ossification of the first or first and second costal cartilages, thus leading to a stenosis of the thoracic inlet, compression and deficient ventilation of the apex, and consequent susceptibility to infection. Although the percentage given is rather high, from statistics at present available, I am inclined to believe that the percentage of these cases is about 15 of all cases of pulmonary tuberculosis. I have myself seen one such case treated surgically. Treatment in these cases is plain enough.

In those cases where there is an exostosis at the junction of the gladiolus and manubrium sternii according to Rothschild's view, it must be removed. While in those cases where there is stenosis of the thoracic inlet either due to shortening or premature ossification of the costal cartilages, the latter being the more probable, the costal cartilage must be divided and the ends allowed to retract and remain open, thereby relieving the pressure. Considering the seriousness of the operation and the important structures around, surgeons will not undertake the operation lightly unless fully confident of their skill and experience in antiseptic surgery. Lastly I may also be allowed to impress upon the Indian practitioners, the importance of an examination under the X-rays and a radiographic photograph which will clearly show if there be any bony changes or abnormality in the cartilages or ribs. In conclusion I need hardly mention that this surgical treatment is only applicable to those cases which do not yield in which the disease progresses in spite of medical treatment—specially open air and sanatorium treatment. In addition the patient must be kept in the best possible surroundings and should be sent to a sanatorium or to the sea-side as soon as possible after the operation.

• ENDOMETRITIS.

BY

CHARLES J. DRUECK, M.D, CHICAGO.

Endometritis, literally speaking signifies inflammation of the lining membrane of the body of the uterus. Clinically, however, we seldom if ever find the pathology so limited, usually the trouble extends into the rest of the organ. That this is but the natural result is evident when we remember that the same nerves, blood vessels and lymphatics serve all of the different structures and all are alike subject to the various nervous and vasomotor changes. Infectious products picked up within the uterus are carried through the muscular body of the uterus to the

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minute net-work of lymphatics on the serosa; and then through the broad ligament.

Endometritis occurs in three classical forms: (1) Simple or hypertrophic, (2) Puerperal or septic endometritis, and (3) Tubercular endometritis. Each variety has its own history, symptoms and treatment so different from the others that each requires separate consideration. This paper has to do with the simple form, leaving the puerperal and tubercular infections for future consideration.

Inflammation of the endometrium is usually the reaction of the tissues to microbic invasion, but not necessarily so. Traumatism, suppressed menstruation, retained secretions, malposition of the uterus, morbid growths in or about the uterus and excessive venery and masturbation are all exciting causes, but such cases are rare. These same conditions are sometimes only predisposing factors, but when they are the sole etiology of the endometritis the symptoms are always subacute and mild in character and never aggravated or severe as occurs at times in microbic infections.

Normally the cavity of the uterus is absolutely sterile and the constant flow of mucus and lymph from the glands although imperceptible in amount is sufficient to prevent any of the micro-organisms usually found in the vagina from entering the uterus. Infection is therefore always mechanically introduced into the uterus through the use of unclean instruments, manipulations, during miscarriage, labor or the puerperium, or by the gonococci, which latter can develop despite the lactic acid bacillus of Doederlein which is normally found in the vagina.

The germs most frequently found invading the uterus are the Gonococcus, Streptococcus and Staphylococcus. Others are occasionally found, but they are of lesser importance.

Gonorrhœal endometritis, sometimes called specific endometritis, is the most frequent form, and, unless mixed with other germs, is subacute in character. It frequently spreads along the membrane to the fallopian tube, causing dire distress, but is rarely taken up by the lymphatics and carried into the general system. The Gonococci are often aided by other germs (most frequently the staphylococci) and the combined infection is virulent. In such instances the micro-organisms and their toxins may be taken up by the lymphatics.

Endometritis due to infection by the Streptococcus and Staphylococcus (sometimes called septic endometritis), is a virulent infection, particularly that due to Streptococci, and usually follows a miscarriage

or confinement. This form of infection may occur in any degree. It is sometimes most virulent as well as far reaching in its complications and sequelæ. The streptococci permeate all structures, the lymphatics, body of the uterus, ligaments, tubes and ovaries, and then out into the cellular tissue causing cellulitis, and finally out into the peritoneum producing peritonitis. In the worst cases even entering the general circulation causing septicæmia. In this septic form the mucosa sloughs off or occasionally is covered with a diphtheroid deposit. This destruction usually occurs in patches but may be diffuse and large pieces of mucosa or even the muscle wall of the uterus is cast off.

Simple endometritis presents many variations in character and course according as the parenchymatous or interstitial structures are involved. Where the glandular structures are chiefly affected, they tend to fill the cavity of the uterus and block up the cervical canal. The secretion is abundant and is retained until decomposed and the odour very offensive and suggestive of malignancy. This condition is sometimes called benign adenoma. In other cases both the glandular and interstitial tissues are hypertrophied and a fungoid condition develops.

Each of these conditions is but a different form of the same disease i.e. hypertrophic endometritis, and in the later stages when the endometrium is thin and the elements obliterated it is called atrophic endometritis. This is the condition found in hyperinvolution following pregnancy, in old age, and in the late stages of chronic localized inflammation. In the late (atrophic) stage the discharge may be abundant, but it contains few lymphoid elements, hemorrhage is scant and the blood tends to coagulate because of the lack of lymph. Dysmenorrhœa and supersensitiveness of the uterine canal occur. In the aged the endometrium is sometimes entirely missing and the muscle atrophied. The discharge is thin and purulent sometimes bloody and erodes the vaginal and vulvar surfaces. These different stages are never sharply defined and every patient presents symptoms of several stages. Therefore a classification based upon the clinical picture as catarrhal, hemorrhagic, or senile is ambiguous and confusing and should be abandoned.

The symptoms of endometritis are pain, increased secretion, menorrhagia or metrorrhagia, fever and reflex nervous manifestations of various kinds. In a mild case with the disturbance limited largely to the endometrium these symptoms are mild or indefinite and a diagnosis may be doubtful. Likewise, if uterine, tubal or ovarian disease complicate, the symptoms may be so marked as to render only an obscure picture.

The pain of endometritis is a constant, dull ache in either the uterus or the region of the lumbar plexus, sometimes radiating through the pelvis and thighs. When obstruction of the cervical canal exists or there is flexion of the neck, the pain is spasmodic and if the peritoneum is involved the pain is lancinating. As these same nerves are affected in all pelvic disturbances this same character of pain is complained of in each and every affection and is not pathognomonic of endometritis.

The secretions are increased in quantity, thin, and either purulent or bloody. It decomposes so quickly and has such a decayed flesh odor that an erroneous diagnosis of malignant disease is sometimes made. These discharges destroy the spermatozoa and the women are usually sterile or if conception occurs the endometrium furnishes but poor support to the ovum and abortion usually occurs early.

Menstruation is promptly affected. It is frequently suppressed for a time and in septic endometritis may not reappear. The suppression of lochia or menstruation always betokens serious infection. Menorrhagia and metrorrhagia usually supervene. In chronic endometritis the menstruation is more profuse and the period protracted. Frequently it amounts to a menorrhagia. There is also sometimes a hemorrhage between the usual menstruation.

Fever is slight except in the acute cases when it may be high (104 to 105°) and is accompanied by frequent chills.

Among the reflex phenomena are vertex or occipital headache, irritation of the bladder and rectum, nausea and attacks of hysteria melancholia or neurasthenia. The patient soon becomes anæmic and weak. All of these symptoms are aggravated by conditions that determine a venous congestion to the parts such as long standing or long walks, constipation and the menstrual periods. All of the subjective symptoms seem out of proportion to the local pathological findings.

Examination.

Examination shows the cervix edematous and frequently eroded and granular. The uterus is large, boggy and tender. A thick glue-like discharge escapes from the os but if this is wiped away the characteristic thin bloody or purulent discharge from the uterus will be seen. The cervical canal is partly open. Depending upon which part of the organ is involved the cervix may not be appreciably affected or the uterus may be hard, of normal size and not tender. In the late (atrophic) stage of the hypertrophic endometritis the uterus may be diminished in size and the discharge clear.

Examination with the uterine sound determines a patulous cervix and a very sensitive corporeal endometrium. Such an examination is very painful and is followed by bleeding because of the fragile blood vessels.

Diagnosis.

The distinguishing signs and symptoms of endometritis are dull pelvic ache, enlarged tender uterus, open cervical canal thin purulent or bloody discharge from the cervix and the sensitive bleeding lining of the uterus.

Microscopical examination of the scrapings of the uterus are sometimes necessary to differentiate the various forms of endometritis or to exclude other lesions. Such a curettage (exploratory curettage) can usually be accomplished without an anesthetic because of the patulous cervical canal.

Treatment.

In simple endometritis rest in bed, saline laxatives, a plain absorbable diet, hot sitz baths and hot vaginal douches of plain or water or normal salt solution are all that is needed. When the disease is complicated with other disturbances of the uterus or adnexia of course they need attention primarily.

Malpositions, flexures, deformities or stenosis of the cervical canal or a lacerated cervix must be remedied. Retained placenta, polypi or morbid growths within the uterus may be the exciting cause and perpetuate the endometritis until they are removed. In the non-septic cases local treatment should be deferred until the acute stage with pain and tenderness has passed unless there is some positive indication for special treatment. In the specific cases curettage is always indicated.

In the septic forms with continued fever it is necessary to douche repeatedly and these douches should be performed under the strictest aseptic precautions. When intra uterine douches are given the return flow must be watched because there must be unimpeded exit. Usually the cervical canal is patulous enough to allow a ready return flow but if it is not a return flow douche must be used. Serious and even fatal accidents have occurred because of neglect of this precaution.

The germicidal property of the douche is of less importance than the flushing effect and sterile water or normal salt solution will act very well when used every three to six hours. The stronger antiseptics may be indicated in special instances (bichloride 1 to 5000 or Carbolic acid 1%) but they must be used less frequently because a portion of

the solution is left within the uterus and when this is absorbed there is always the possibility of systemic poisoning.

All infections consume the patients vitality and in these protracted and virulent poisonings it is well to urge a simple but highly nutritious diet. Alcohol, Ammonia and other stimulents are considered only as the indication arises but Iron, Quinine and Strychnine are useful in all cases as general tonics. Any constitutional dyscrasia should also receive attention.

When the temperature is high an ice bag over the hypogastrium is soothing and reduces the temperature but it must be removed as soon as the temperature falls.

After the acute stage has passed constitutional measures are of much importance. Absolute sexual rest, a carefully regulated diet, close attention that the bowels are loose are free, regulation of the hours of work and exercise so that the patient is not fatigued by prolonged standing or walking. Comfortable but loose fitting clothing, plenty of fresh air and sunlight and a change of scenery.

General therapeutics are more important in chronic cases than the local treatment although each case presents its own peculiarities.

In simple endometritis (that due to other uterine disturbances) the underlying cause will of course need first attention because while much may be accomplished by local treatment the benefit can be but temporary if the exciting cause remains. After subinvolution of the uterus, laceration of the cervix or perineum or displacement of the uterus has been remedied the patients recovery will be hastened by the vaginal douches, applications of Iodine, Ichthyol and Glycerine to the vaginal vault or puncture of the cervix as indicated.

When this treatment has been followed out and fails to give relief recourse to the curet must be had. The operation of curettage will be taken up at another time. Applications to the endometrium are both useless and dangerous and cannot be considered.

Our Contemporaries. MEDICINE.

Malta Fever, Methylene Blue In The Treatment Of.

The authors consider methylene blue the best remedy at our disposal in this affection. It is essentially parasitotropic, and affects but little the body-cells themselves. It is rapidly absorbed, and is effective in relieving pain. In two of the cases treated there was an immediate fall of

temperature; in another the affection, ordinarily a very prolonged affair, yielded completely on the twenty-eight day. The drug was administered in cachets of 0.05 gm. ($\frac{1}{2}$ grain) twice or thrice daily. Where digestive disturbance appeared, 0.25 gm. (4 grains) of milk sugar was added to each cachet. In case persistent vomiting develops, the authors advise that the drug be given hypodermically. Untoward effects can be almost entirely obviated, however, if the best quality of methylene blue is employed.—*Monthly Cyclopaedia & Medical Bulletin.*

Diabetes Mellitus : Taka-Diastase In.

From observation of the effects of this substance in 5 diabetic patients, the author concludes that it has a tendency to alleviate all the symptoms. It decreases the amount of sugar for a time in most cases. Even if the sugar increases during the administration of the ferment, the symptoms are relieved. There are no untoward effects, though in two instances the patients seemed to be somewhat depressed for a few days after the beginning of the administration of the drug, notwithstanding the simultaneous relief in the symptoms. The drug was given in powder form in capsules, 5 grains being taken after each meal and before retiring. It must be continued to keep up the good effects, the dose being, however, reduced or increased from time to time as required.—*Ibid*

Bismuth in Gastric Therapy.

A GOLDMAN analyzes 100 cases of gastric disorder in which bismuth was used in doses of one-half to one dram one-half hour before eating, in half a glass of water; also in combination with magnesia usta and sodium bicarbonate. It is concluded that bismuth given in doses large enough acts mechanically, forming a coating on the mucous lining as well as reducing the acidity of stomach contents markedly, differing from alkalies in that it does not stimulate the flow of gastric juice. Given in cases of gastro-succorrhœa it retards secretion and coats the stomach, relieving it of the gnawing pain and doing away with nausea. It acts much more powerfully on a fasting stomach.—*The Canadian Practitioner & Review.*

A Bedside Widal Test.

Dr. G. GILMAN reports a bedside method of Widal testing which consumes little time and gives results within a few hours. The test solution is a formalized culture of the typhoid bacillus, which can be procured

from any pathological laboratory and will keep any length of time. In a small vial are placed 48 drops of the test solution, and to this are added two drops of the patient's blood. The tube is corked, well shaken, and set aside for three to five hours. A clear supernatant liquid indicates positive, a turbid liquid a negative reaction. The same technique may be used for other agglutination test.—*The P. M.*

Transmissible (?) Diabetes.

LANGAKER, in the current issue relates a remarkable episode in which five out of seven children of a family, aged from 4 to 11 years, died of diabetes within four years, one case following another. Such histories are common in tuberculous families and no one questions the transmission of the disease from member to member; and it would seem at first sight that nothing but transmission could explain the cases under consideration. The stock was a sound one, the parents in good health, and the surroundings hygienic. The author makes no mention of any similar case in literature. Conjugal diabetes occurs now and then and suggests a possible transmission. It does not appear even that the diabetes in these cases was of a uniform type. One case was accompanied by degeneration of the pancreas, but in another this could not be affirmed. There seem to have been but two autopsies. The case appears to have been an example of familial disease in the narrower sense of the term, *i. e.*, confined to the children of one family, the parents remaining immune. Many diseases have been placed on record which assumed this form, *i. e.*, that of "unifamilial childship." When disease supposedly non-transmissible appears in this quasi-contagious or infectious form we are forced to think of the doctrines of Mendel and de Vries as to the sudden appearance of new types and the mutation of species.—*The Medical Times.*

Adrenalin and Asthma.

The beneficial effects of the administration of adrenalin in attacks of asthma have been attested by several authors, and the treatment has already been dealt with in these columns. Hitherto the method advocated consists in the subcutaneous injection of a few minims of the adrenalin solution (1 in 1000) as soon as an attack of asthma develops. More recently, however, inhalations of adrenalin have been employed, apparently with equal success. Dr. J. Segel, of Vienna, combines the use of adrenalin with the administration of oxygen and places 1 c.c. of the 1 in 1000 adrenalin solution in the reservoir containing the oxygen. By experiments upon himself he first ascertained that inhalation of such a

mixture of oxygen and adrenalin solution does not occasion any rise of blood-pressure. He publishes details of two cases, in which the attacks of asthma were extremely severe and persistent, and did not yield to other forms of treatment. The inhalations gave immediate relief and by repeating them at intervals for some time the attacks have ceased and the patients have completely recovered in general health. Dr. J. Pick, of Charlottenburg, has obtained similarly successful results by inhalation of powdered adrenalin through a specially constructed mask applied to the face. He also publishes an account of several severe cases of asthma which have rapidly yielded to this form of treatment. If the effect of the drug in these conditions is due to its local action on the respiratory mucous membrane, administration by inhalation would appear to be the more rational method, but this point has not as yet been clearly demonstrated. It would be interesting to compare the effects of the different methods, inhalation and injection, on the same patients, and in this way ascertain which is the more efficacious.—*The Hospital.*

Aviation Sickness.

During the aviation week in Bordeaux last year, Drs. CRUCHET and MOULINIER questioned the principal aviators in regard to their physical condition, feelings, etc., during flight, and made observations on their blood-pressure before and after flight. The results of their observations were made the subject of a paper read at a recent meeting of the Academie des Sciences. During ascent dyspnoea, tachycardia, noises in the ears, headache, and a pressing need to urinate are experienced. The cold quickly becomes intolerable. These various phenomena are closely similar to those of mountain sickness, but they appear much earlier—with novices at a height of only 500 metres. During descent the same symptoms are experienced with increasing intensity as the aviator approaches the ground, but the dominating troubles are headache and a sensation of burning extending over the whole face, which becomes very congested. There is also a strong inclination to sleep, often compelling the individual momentarily to close the eyes. On reaching the ground the noises in the ears and the desire to sleep are accentuated. There is also frequently vertigo and a sort of heaviness and muscular weakness, with cyanosis of the extremities. The pulse is more rapid and the blood-pressure higher than before the flight. The authors attribute these troubles arising from changes in blood-pressure to the rapidity with which the aviators traverse space. On descending from a height of 1,000, 2,000, or 3,000 metres in four or five minutes, after having attained that height in the course of

twenty, thirty, or forty minutes, the organism has not time to adopt its circulatory system to the rapid variations in atmospheric pressure, amounting to 520 mm. of mercury at 3,000 metres 591 at 2,000 metres, and 760 at the sea-level.—*The Hospital*.

A Case of Obstinate Flatulent Dyspepsia Treated with Butter-Milk.

BY

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There is no ailment, more common, in the educated community of Bengal and there is no condition more difficult to treat than dyspepsia. This, however, may be taken as absolutely true that the proper treatment of dyspepsia is dietetic. Medicine may alleviate or check some of its symptoms but it cannot cure it. The proper cure of the disease lies in a diet which the stomach can easily digest and which at the same time strengthens the nervous system as well as the different organs that keep the body in perfect health. Unfortunately for the doctor, his patient is more prepared to hear of drugs than to hearken to any advice regarding his dietary or the mode of life that he would adopt. Any attempt on the part of the physician in this direction proves to be absolutely fruitless.

The cause of dyspepsia is manifold. That man is the only animal that eats when he is not hungry and drinks when he is not thirsty; that everyone is not born with a strong stomach, any more than he is born with a clever brain; that in many cases, the disorder may be dated from very early life, when from insufficient or improper nourishment, in infancy and childhood, the stomach has been permanently injured, therefore, throughout life is unable to digest and assimilate food as it should; that the continued nervous strain, when he is a student, from worries and anxieties of various university examinations and those from ceaseless struggle for existence, which is his destiny in after life; that the quality not the quantity alone, of food he partakes—all these and many others together with deteriorating influences of civilised life have a great share in the causation of dyspepsia, there cannot be the slightest doubt about it in the mind of any one who has even casually considered the subject. I do not purpose here to mention all or many of the causes of dyspepsia. I shall, however, be satisfied to touch upon a few errors of our own, not the errors of our ancestors nor of others besides ourselves.

The first and foremost of these errors, it appears, is the great *hurry* at meals. In nine cases out of ten, the educated Bengali spends as little time, as possible, over his food and thus it is bolted and is masticated very imperfectly. The mechanical disintegration of food by thorough mastication has much to do with its ready digestion. All farinaceous food, such as, bread, rice, &c., and vegetables which form the principal bulk of a Bengali diet require more mastication and insalivation than meat, for they absolutely require saliva for their digestion. If they are not pulverised in the mouth the saliva does not penetrate them. Insufficient division of food—be it carbohydrate or albuminous—from an omission or inability to masticate it properly may give rise to persistent indigestion—the larger portions of the food not being penetrated and acted upon by the various digestive secretions.

The next important error is *want* of sufficient *rest*, physical or mental, before and after food. This is responsible for disorder of digestion in many. The over-taxed student leaving aside his books, finishes his hasty meal and then either sits at his desk with his books again or runs to his college; the lawyer, the teacher, the officer, the clerk, all hurry to their respective places of business, without taking proper rest after their morning meal—the principal meal of the people of Bengal. If the blood leaves the digestive organs and goes up to the brain or any other part of the body, the digestion is not performed properly.

Want of physical exercise is another potent factor in the causation of the disease. Exercise, short of fatigue, is an important element in giving tone to our body in general and to the digestive organs in particular; it helps combustion and elimination of waste products. It increases our appetite, together with increased capacity for digestion.

The quantity of *fluid* taken at meals is often of importance. It interferes with ready digestion of food, firstly because it prevents mastication and insalivation of food as it is apt to be softened in the mouth by water instead of saliva and secondly because it dilutes the gastric juice in the stomach and renders digestion slow, thus affording ample time for the bacteria of fermentation to grow and decompose the ingested food. It may be noted here that tea, which has of late, found an important place in many a Bengal household is prone to cause dyspepsia, especially if taken in excess, or prepared badly.

Briefly speaking the *symptoms* of dyspepsia are:—a furred tongue, want of appetite, nausea, vomiting, oppression in the chest, heaviness in the stomach, pain, distension, flatulence, acidity, constipation and diarrhoea. Of these various symptoms one or two require particular mention in this place.

Acidity.—This is due in the majority of the cases, to organic acids, such as, lactic, butyric due to fermentation of food in the stomach. Of these acids the butyric acid has an especially irritating local action causing heart-burn and much pain in the stomach.

Flatulence.—The wind in the stomach and intestines may be due to increased ingestion, increased formation, diminished absorption or lessened expulsion. Atmospheric air is swallowed with the food, saliva and drink; the air thus ingested, gives but very little trouble to the patient, for it is either again brought up or its oxygen is rapidly absorbed while the nitrogen remains in the stomach and intestines. But the great source of the gas is from decomposition of the food in the stomach and intestines, especially the carbohydrates and the food containing cellulose in large quantities. The gas thus derived is marsh gas, hydrogen, together with a large volume of carbonic acid gas. Of these gases, the carbonic acid rapidly absorbs giving very little trouble to the patient. Such is not the case with the other two gases. They are absorbed very slowly indeed and unless expelled as rapidly as they are generated they tend to become a source of great discomfort. It follows then that patients suffering from chronic indigestion and disposed to flatulence must be extremely careful to avoid such articles of diet as tend to butyric acid fermentation. Milk appears to be especially injurious in this respect. Starches and sugars together with cellulose of fruits and vegetables are a great source of these gases, especially if they are imperfectly insalivated and met in the stomach with insufficient or unhealthy gastric secretions. The healthy gastric juice is antiseptic in its action. It kills the bacteria of fermentation. When sulphur is present—as it is in cabbage—sulphuretted hydrogen may also be found.

The following case may be of interest to some, owing to certain points noted above and to the simple method in its treatment, that I adopted:—

I. B., a Bengali youth of 28 years of age, a clerk in a local Government office in the town of B in Bengal. As far as his memory could go *I B* could not remember if he had ever spent more than 7 minutes at a time over his meals. When he was a student he had to work hard for his examinations. He could not make sufficient time for rest or sleep. After leaving his college he entered into Government service as a clerk, in which capacity he was working for the last two years. Besides his office work, he had to spend the whole morning and some hours of the night too in looking after his private business, the pressure of which was not inconsiderable. Just after his morning meal he had to walk up

daily—a distance of about 3 miles—to his office. Before his present complaint he had occasional temporary attacks of disorder of digestion, always traceable to a definite exciting cause—bad cooking, insufficient appetite, or perhaps a heavy, rich meal. As a consequence of this he had to cut off one article of diet after another, with benefit, at first, but later on, without success, lessening his nutrition and diminishing his strength and comforts, so that he was at length brought to the present stage as I saw him.

On arrival, there was the patient—a pale, emaciated youth with anxious countenance complaining of pain in the stomach and bowel with flatulence and extreme weakness. The pain was of a dull aching character, at times severe and cramp-like. The tongue coated with white fur. The bowels confined. The skin muddy in appearance. The pulse weak and small. On palpation there was slight tenderness over the liver and the umbilicus. The whole abdomen was distended with gas. The urine came away scantily but frequently and scalded when flowing. There was slight rise of temperature every evening with severe colicky pain, most felt at the umbilicus. He was treated by the local doctors there, at first with alkaline stomachic and then with acid stomachic mixtures to little or no purpose. As for his diet he was getting soft rice, fish, milk, &c. In addition to these he was taking the juice of one or two pomegranates and grapes.

Treatment:—He was advised to drink a cup-ful of hot water morning and evening. His previous diet was altogether stopped and butter-milk *i.e.*, ghol was substituted in its stead. He was advised to begin with a poa (8 oz.) of ghol for the first day and gradually increase the quantity daily until he would be able to digest and assimilate a seer and a half of it. All grapes and pomegranates were stoppd; he was allowed to drink the water of a single cocoanut daily. As for medicines he was prescribed *Re. Sodii Bicarb gr. x; Sodi Benzoat gr. x; Spt. Ammon. Aromat. m. xv; Spt. Myristicæ; m. x; Aqua ad. i oz.*, three or four times a day a few minutes before food. For obstinate constipation he was prescribed the following pill.—*Re: Hydrarg. Sub: chlor. gr. ½; Aloin gr. ½; Ext. Nucis Vom. gr. ½; Ext. Taraxaci gr. ½; Ext. Belladonna gr. ½*, at bed time to be followed by warm water douch in the morning

Result:—The colic pain did not appear even on the first day of treatment. At the end of the 4th day the patient felt much better. The distension and flatulence began to decrease perceptibly day by day. The urine became free and less scalding within a course of a

fortnight the patient was free from almost all his former troubles. There was no more rise of temperature in the evening. He could easily digest a seer and a half of ghol daily. He gained sufficient strength to come downstairs and walk in the adjoining garden for a few minutes. He was allowed to take rice on the 20th day of treatment with necessary instructions. The patient was completely cured of his ailment of more than 4 months duration.

Remarks:—Anything which prevents butyric acid fermentation is helpful in the cure of dyspepsia with flatulence. The bacillus lactatis found in abundance in ghol (butter-milk) kills the bacteria of fermentation living in the stomach and the intestines. Contrary to popular belief ghol (butter-milk) is a highly nutritious article of diet.—*The C. M. J.*

The Prognosis in Chronic Valvular Disease of the Heart.

BY

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I purpose to limit the following discussion to the chronic forms of heart disease, particularly to those exhibiting endocarditis of the valves and to arteriosclerotic changes in the valves and coronary arteries; and to depart from the customary clinical paper by basing it upon personal observation of private cases, and not upon combined hospital and private cases with those culled from the literature and with the added opinions of the masters in medicine. The motive for such a paper is a mixed one. In the first place our literature is overweighted with hospital cases and with the statistics based upon them. This does very little harm when we are studying the pathology and diagnosis of disease, but when we wish information about the duration and prognosis of a particular disease, hospital cases may be very misleading. As diseases of the heart have been of great interest to me ever since I began the practice of medicine, and as I have been on the staff of the Philadelphia General Hospital for a number of years, the opinion expressed is at least not the result of one-sided observations.

Another motive for treating of private cases only arises from the feeling that every member of our profession should strive to advance our knowledge of medicine; it is a duty which he owes his profession. And it would seem that after practising twenty years even the poorest of us should have learned something which is worth imparting.

Age.—Of the 63 cases studied, 40 were fifty years old and over, 23 were over sixty years of age, 16 were over seventy, 7 were over eighty, and 2 were ninety years of age. Two-thirds of the cases, therefore, were fifty years old or more. The impression which is common among laymen that disease of the heart necessarily means sudden death, we have of course long known to be erroneous. But I believe that a great many physicians take much too gloomy a view of the seriousness of disease of the heart. Perhaps we can appreciate the facts better if an attempt is made to estimate the duration of the disease.

Duration.—Of the cases which form the basis of this paper 37, or more than half, are still under observation. Of the remaining number some have died and some have passed from observation, but in very few instances could death have occurred without my knowledge. It has been possible, therefore, to watch a number of the cases for periods of ten years or more, and it is no uncommon experience to see comparatively little change in that time, and often very little abridgement of activity. Some of the patients have had valvular disease for much longer than ten years. In one patient with aortic insufficiency, the history points to a duration of at least twenty two years. At that period in the past she was taken to a prominent clinician who made the diagnosis and enjoined her from any exertion which would tax her heart. How long she had the lesion before it was recognized is of course altogether uncertain. But even today it is rather a lesion than a disease; for while she is weak and gets easily tired, she is able to look after her household and family.

In another woman, now fifty-six years old, I have myself been able to keep watch of her progress for nearly twenty years. She had mitral stenosis and some arteriosclerosis at that time. The lesion had probably existed for years before that time. This patient has enjoyed very good health, though she was never regarded as a vigorous woman. She has survived typhoid fever, appendicitis followed by operation, embolism of the cerebral arteries, and, since this paper was begun, pneumonia of both lungs.

In a woman, now twenty-five years old, I made a diagnosis of mitral insufficiency sixteen years ago. There has been scarcely any inconvenience from the lesion, though she has not quite the endurance she should have, and there is some dyspnoea occasionally following unusual exertion.

In another lady, eighty-eight years of age, there was marked dilatation and hypertrophy of the heart when I began attending her about

twelve years ago. It would be a fair estimate to say that the lesion had existed at least as long before I saw her. She has only died since this paper was begun.

In a woman, thirty-five years old, the disease of the heart probably dates back to an exceptionally severe attack of scarlet fever when she was five years old, that is, thirty years ago. She was taken sick in May and was unable to walk until the following September. The lesion is an aortic insufficiency. I have attended her for ten years and she is in better health and has more endurance now than she had ten years ago.

In the great majority of the cases one cannot tell how long the lesion has been in existence. This is partly because our patients come to us with the lesion well established, that is, in many cases it comes on insidiously, and partly because we do not wish to make too direct inquiries about the heart lest we alarm the patient. There can be no doubt that the heart lesion may remain a lesion and not become a disease under favorable circumstances for a much greater number of years than we commonly suppose.

Sex.—It has seemed to me that after the stresses of pregnancy and the child-bearing period women bear heart disease better than men. Yet in the series of cases underlying this paper, of the 28 cases over sixty years of age, only 12 were women. The only reason for better tolerance if they do bear the disease better, is that they are able to lead a more sheltered and protected life. They do not have to go out in all weathers, breast high winds, wade through snow, catch trolley cars, and keep fixed appointments. They are enabled to a much greater extent than men to wait for favorable conditions when they go abroad. But, of course, the men who bear heart disease best are also those who can be shielded from stresses and strains.

Some one may reasonably object that in speaking of the prognosis in old persons with valvular lesions due to atheromatous changes one should really speak of the prognosis of arteriosclerosis. That is true. Nevertheless it is convenient to consider the cardiac lesion as the most obvious local expression of the disease. Moreover, in at least some of the cases, the arteriosclerosis of the valves has an infective process superimposed upon it.

CLIFFORD ALLBUTT aptly says that the main factors in the prognosis of heart disease are four: the age of the patient, his calling, temperament and habit of body, the specific kind of lesion, and the degree of the lesion.

In the present group of cases it will be remembered that two-thirds of them were fifty years old or more. While it is unlikely that in most of the cases the lesions started in childhood, it is probable that in some of the cases they did. For example, the young woman of twenty-five who has had a cardiac lesion for sixteen years practically without symptoms may reasonably look forward to a considerably longer life with good health. In general, we must admit that in persons past middle life the heart does not accommodate itself to a lesion as well as it does in adolescence. On the other hand, a heart lesion which comes on gradually as part of an atheromatous process is often astonishingly well borne. I have been attending for more than ten years a man who exhibited some enlargement of the heart and mitral insufficiency when I first saw him. The lesion seemed like an old one then. The loud, rough, coarse systolic mitral murmur has scarcely varied during the years I have attended him. While he has had various ailments the heart has called for no treatment and has scarcely ever received any. In other words, there has been a persistent quiescent lesion, but very little disease.

While, therefore, the old heart has less power of adaptation than the young heart, the lack is in part compensated by the lessened stress which sometimes the older heart has to endure. Therefore, if a man during his early life has acquired a competency which enables him to live comfortably without hard work, worry, or much stress of any kind he may, barring accidents, live almost as long with a heart lesion as without it.

Occupation is an important factor in prognosis. One important reason why the prognosis in private cases is so much better than in hospital cases is that among the former there are fewer belonging to the laboring classes. Undoubtedly a man with heart disease is better off doing office work than digging trenches; but we all know that a man doing office work or engaged in professional activity may be so greatly worried and harassed that his heart will suffer.

Habit and temperament are also important factors. A man who eats to excess or who drinks immoderately is more prone to degeneration of the heart and kidneys as well as to accident and acute illness. Moreover, such men are more apt to be sluggish in habit, to be overweight and have flabby muscles. The person who bears chronic heart disease well is he who is of spare build and temperate habit. He does not overwork his metabolic apparatus and has no extra load to carry.

If a man has such a reasonable temperament that his physician can tell him he has heart disease without unduly alarming him, and the

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patient will use his knowledge to adapt himself to the altered mode of life which the weakened heart demands, much damage may be spared the heart and life be lengthened with maintenance of comfort and usefulness. If, on the other hand, he is nervous and fussy, given to undue haste in his movements, prone to run for a car or to go upstairs two steps at a time, if, in a word, he cannot be schooled into deliberateness of action, he will wear out his heart much sooner.

Another factor in prognosis is the extent of the lesion. The greater the obstruction or the leakage from a valve the greater the strain upon the heart. We have all seen cases of aortic insufficiency for example, in which the jumping arteries, a pronounced water-hammer and capillary pulse, and a marked diastolic murmur, all betokened a very decided insufficiency. There can be no question that in such a case the strain upon the left ventricle is far greater than in a case in which the leakage is hard to make out, in which the pulse has scarcely any water-hammer character, and in which there is no capillary pulse. I am not forgetting that the prognosis in all cardiac affections depends more upon the integrity of the muscle than upon the valvular lesion, but only showing how an extensive valvular lesion leads to more damage and strain than a small lesion.

The extent of a mitral lesion may be inferred from the amount of dilatation of the right heart, and the secondary effects upon the lungs, liver, and other organs. A well preserved accentuated pulmonic second sound is of good prognostic import. While in general the character of the murmur is of no aid, it has seemed to me that a long murmur which wholly replaces the first sound indicates considerable regurgitation. When the first sound is well preserved there is either an associated stenosis or there is not very much regurgitation.

The kind of lesion.—It is generally conceded that aortic insufficiency is the most serious of the valvular lesions. Mitral obstruction stands next in order of gravity, mitral insufficiency ranks third, and aortic obstruction fourth. Lesions of the tricuspid valve are usually secondary to mitral lesions, in which case the prognosis is that of the primary lesion; whereas, lesions of the pulmonary valve are usually congenital and result in death of the patient either in infancy or by puberty. But aortic insufficiency is less serious when it has followed an endocarditis than when it occurs as the result of arteriosclerosis, chiefly because in the latter form there is greater liability to disease of the coronary arteries, upon the soundness of which depends the integrity of the heart muscle; and also because many patients

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with aortic lesions have them as the result of syphilis, which causes degeneration of tissues other than the arteries. But the prognosis is good as long as the left ventricle is not much enlarged, and subjective symptoms are absent, and the rhythm is normal. Sudden death from blocking of the coronaries or paralysis of the ventricles is more apt to occur in this lesion than in any other valvular lesion.

Mitral obstruction developing in early life and serious enough to cause symptoms shortens life, materially hampers its activities, and subjects the patient to dangerous complications. The majority of patients die under forty years of age. Many show poor physical development. I have noticed in girls a later appearance of menstruation and a tendency to irregularity or to amenorrhœa. After marriage some are sterile, and some abort or miscarry in pregnancy, while others die during labor or soon afterwards. I am speaking now not of slight lesions but of those developing in early life and serious enough to produce symptoms. Moreover, these patients form the bulk of those showing embolic phenomena of the brain or lungs, and usually die very rapidly if pneumonia sets in.

When the lesion is a slight one it often causes practically no symptoms. The patient learns to adjust himself to a lessened range of activity, and in other respects seems perfectly well.

In advanced cases a persistent arrhythmia may develop. It is of serious import in proportion to its constancy. There is probably involvement of the bundle of His.

Of mitral insufficiency one need only say that slight grades of it are very common and that they do not much impair the activity of the patient or shorten his life. The serious grades bring all the well-known symptoms of broken compensation in their train and greatly shorten life.

Etiology.—In the cases which form the basis of this study it has not been possible to ascertain the cause in most of them. A definite rheumatic history is the exception. To accept the vague leg-ache, back-ache, and tonsillitis as satisfactory evidence of rheumatic fever is unscientific. Undoubtedly rheumatic fever is a very frequent cause of endocarditis and pericarditis, but until we know the causative agent we are likely to attribute many cases to rheumatism which the more accurate knowledge of the future will show were due to other infections. I have seen cases in which there was a distinct history of tonsillitis followed by endocarditis. And I have recently seen an endocarditis follow an ordinary cold with laryngitis. In many of the cases which are found in

persons past middle life the endocarditis is only a part of the process which is making progressive changes in the arteries. These cardio-arterial cases form the bulk of the cases which show heart lesions in old persons. In many of them, most of them, I believe, there is also degeneration of the kidneys in spite of the fact that we may not be able to find proof of this in the urine.

As the cause in so many of my cases is uncertain it will be impossible to draw any inference in prognosis based upon the etiology.

In distinctly rheumatic cases the prognosis must often be guarded owing to their liability to a fresh rheumatic endocarditis. The prognosis improves somewhat with the age of the patients. Young children are very prone to it, older persons much less so. The liability of every damaged valve to a septic endocarditis must also be kept in mind.

Importance of Subjective Symptoms in the Prognosis of Heart Disease.—The tendency in modern times has been to pay more and more attention to physical methods of studying heart lesions. Physical diagnosis has been an attractive study for many of us and we believe that accuracy in diagnosis is more nearly possible now than it was formerly. But physical methods are more valuable in diagnosis than in prognosis. They are a better guide to the lesion than to an estimate of the functional power of the heart. In prognosis we do not so much need to know whether there is a heart lesion as we do whether or not the patient has heart disease. This distinction is all-important for prognosis and for treatment; and in making it we should rely upon the presence or absence of subjective symptoms of heart weakness. If a man is able to perform the ordinary duties of his daily life without causing pain or any uneasy feelings referable to his heart, without causing dyspnoea, vertigo, dizziness, faintness, fluttering, irregular action, palpitation or swelling of the feet—such a man may have a heart lesion but he has not heart disease, and as long as subjective symptoms remain in abeyance the prognosis is good. Let us try to estimate the value of the subjective symptoms.

Dyspnoea.—Dyspnoea is so common that it might almost be said to be a constant symptom of cardiac weakness. It occurs in all varieties of lesions, but is more frequent in mitral than in aortic valve lesions, and is evidence of some weakness of the cardiac muscle. It may occur following some acute strain such as athletes sustain, or such as happens at times to mountain climbers, or to women in the late stages of pregnancy or in labor. In these cases there is usually some acute dilatation. If the ventricle is fairly sound the dilatation under rest quickly subsides

and the dyspnoea with it. Dyspnoea in valvular lesions also is the consequence of dilatation of the heart or degeneration of its fiber, the latter often preceding and accounting for the former. We find dyspnoea also nearly constant in fibroid heart and in fatty heart, while sometimes with a certain weight or oppression in the chest it is the dominant symptom in angina pectoris.

How shall we estimate the gravity of the symptom in a particular case? By its frequency or constancy, and by the effort which is necessary to its production. Some patients are always short of breath, and upon the least effort it is greatly aggravated. I have seen patients so short of breath that the effect of being fed made them pant for breath, and urination and defecation almost made them faint. Between this extreme degree of dyspnoea and that induced only by running or hastily climbing several flights of stairs, there are all grades. A very important question to put to a cardiopath, therefore is, how much can you do without getting out breath? The prognosis will be grave in proportion to the ease with which dyspnoea is induced, its intensity and constancy, and its cause. The prognosis is worse when the dyspnoea is the result of degeneration of the muscle or angina pectoris than when it is due to dilatation secondary to a valvular lesion or to some acute strain.

Cardiac Pain.—Under this head may be grouped for convenience the various abnormal sensations which have to do with the heart. They range from the slightest disagreeable consciousness of the heart, from slight soreness or aching, or uneasiness, up to agonizing pain. If my own experience is any guide the latter is rare. More frequently even in true angina pectoris the patient will complain of a heavy weight pressing down upon the sternum and making breathing difficult; or there will be aching or soreness in the heart, with occasional shooting pains in the cardiac region or in the left arm, shoulder, neck, or right arm. Sometimes the pains are referred to the stomach and resemble gastralgia, acute indigestion, or the gastric crisis of tabes. I have had two patients die of angina pectoris with gastric symptoms. One died in his first seizure; the other had a number of attacks extending to two years before he had one which was distinguishable as connected with the heart.

How shall we tell whether the pain is due to true angina or not? True angina pectoris is more apt to occur in a man between fifty and sixty years of age who has led a life demanding more or less intense

application, or which has subjected him to worry and anxiety. I believe also that the use of alcohol, tobacco, tea and coffee are contributory causes in many cases. Furthermore, angina pectoris is more frequent in those who show arteriosclerosis, atheroma of the aorta, and aortic insufficiency. Finally, it is the characteristic mode of death in certain families. In two cases I have noticed a peculiar hollow or bell-like second aortic sound which may have some diagnostic value. The pulse is not of much value. Early in angina it is usually of high tension. Later it may vary greatly from day to day or even from hour to hour. I have seen it at one visit fairly regular and strong, in an hour unsteady and difficult to count. In some cases they may be marked arrhythmia with great frequency. In the diagnosis of anginal pain one should therefore consider the age and sex of the patient, the family history and tendency, the presence or absence of signs of cardiac degeneration, dyspnoea, oppression, pallor, weakness, etc., and the presence and absence of a cardiac lesion, particularly one involving the aorta.

Arrhythmia.—Arrhythmia may have very little prognostic value or a great deal. I saw, some years ago, an old gentleman, eighty years of age, who had marked irregularity of the heart, which, however, caused him very little disturbance. He told me he had had it for twenty years. BROADBENT mentions a similar case. On the other hand, the arrhythmia which comes on in the late stages of mitral stenosis or aortic insufficiency is of very grave significance, especially if it is persistent. Probably in the mitral cases the sclerotic process has extended from the valves so as to involve the bundle of His. In the aortic cases it may be an expression of serious impairment of the cardiac muscle, the result of sclerosis of the coronary arteries. In some of the milder cases the cause seems to be some irritability or debility of the cardiac muscle depending upon a gastro-intestinal cause, or upon the effect of coffee or tobacco or upon some mental stress. In cardio-renal cases one cannot exclude a toxæmia of renal origin. A cardio-sphygmogram is of great value in diagnosis and in prognosis.

Vertigo and Dizziness.—As symptoms of cardiac disease, vertigo and dizziness may occur in any lesion, but are more common in aortic lesions. One of my patients complained only of an uncertain feeling in her head. She could not always walk straight, and felt uncertain when started whether she was going to reach her destination or fall down. These symptoms indicate failing heart power and to that extent are of unfavorable prognostic import.

Weakness. The patient may complain most of weakness, of getting tired physically and mentally following very little effort; or the weakness may show itself principally in a difficult digestion with some pallor and malnutrition. These symptoms often indicate some degenerative change in the cardiac muscle.

Resume. I may say that the prognosis of chronic valvular disease of the heart in private practice is much better, both as to duration and capacity for work, than most persons realize. It is no uncommon experience to find persons who have sustained these lesions for ten, fifteen and twenty years, in some cases much longer, without either great discomfort or great impairment of their activity. The patients who sustain these lesions longest and with least embarrassment are those of temperate habits and spare build who do not easily become angered or worried and who are controllable as to their mode of life and activities. Those who can lead a quiet, sheltered, protected life naturally live the longest. When death occurs it is usually the result of some accident or intercurrent disease, not directly from the heart.

In estimating the prognosis in a particular case one needs to keep in mind the distinction between a heart lesion and heart disease. As long as there is only a lesion the prognosis is good. A lesion ceases to exist and disease sets in when the heart enlarges and subjective symptoms appear. In my opinion subjective symptoms are better guide to the functional energy of the heart and to its lasting power than are objective signs.

In angina pectoris the duration may be five years instead of the conventional one or two, just as some cases of aortic insufficiency may, under favorable conditions, last for thirty or forty years instead of the ten years which CLIFFORD ALLBUTT says is the average.—*The C. M. J.*

Functional Dyspepsia.

BY

ALLAN B. FEARNLEY, M.B.

It is said of an eminent physician, now deceased, that his advice to his students on the subject of the use of drugs in dyspepsia was as follows: "Gentlemen, when you fail with your alkalis try with your acids," and this sums up the attitude with which the general practitioner is only too prone to regard the treatment of this common complaint. Familiarity breeds contempt, and although it is admitted that a wide clinical experience is essential for the acquirement of an accurate knowledge of any disease, yet such a condition as dyspepsia, which every

practitioner has ample opportunities for studying every day, and thereby building up a sound clinical experience, is neglected, and merely treated empirically—groping in the dark, instead of being conscientiously studied.

This attitude is probably accounted for by the confusion of thought which arises from the necessarily inadequate teaching devoted to the subject in hospitals, producing a feeling of despair of ever arriving at any accurate knowledge of the true causes of the complaint, and, therefore, of its successful diagnosis and treatment.

AN ATTEMPT AT CLASSIFICATION.

Yet in spite of the obvious difficulties of a diagnosis, which must to a large extent rest on subjective symptoms described with more or less inaccuracy by the patient, and despite the absence of practical and reliable clinical methods, it is nevertheless quite possible to form a perfectly definite and simple scheme of tabulation into which practically all cases of purely functional dyspepsia will fall. It must be clearly understood that such a scheme is only a "working plan," founded on general principles, not pretending to be scientifically accurate in the absence of scientifically accurate data—not dogmatic, but adjustable to each individual case.

To begin with, then, the old classifications which are still to be found, even in some recent text-books, are best forgotten—renal, flatulent, nervous, irritative, bilious, etc. For after excluding dyspepsias secondary to organic disease and to general diseases such as phthisis, morbus cordis, cirrhosis, the gastric crises, etc., there are two types of functional dyspepsia, and only two—(a) the hypertonic type, characterised by an excessive secretion of hydrochloric acid and probably also in most cases an increase in motility causing more or less cramp or spasm, and (b) the atonic type associated with a diminished acid secretion and certainly by a decrease in motility.

This classification will be found practically to cover all cases of purely functional dyspepsia. Every case should be approached on these lines and all questions asked and examinations conducted with the object of deciding to which of those two classes the case belongs.

On what, then, does the diagnosis rest? Firstly, there are two fairly definite types of patients corresponding to the two classes described.

The hypertonic is typically otherwise robust, with large appetite, often athletic, a meat eater, and seldom an abstainer, what may be called the "positive" type, and, a most important point, with a high-tension

slow pulse. Pain is his most pronounced symptom. Whereas the typical atonic is the "negative" type, flabby, tired, often anæmic, with nausea in place of appetite, and a low-tension pulse, complaining of discomfort and flatulence rather than pain. Both are almost invariably constipated.

With regard to symptoms, any dogmatic statement is dangerous, since in practice the two types merge into one, except in one respect, which, if it is marked, determines the diagnosis—namely, time of onset of the symptoms.

THE HYPERTONIC TYPE.

In the hypertonic dyspeptic, acid probably continues to be poured out after all the food has passed the pylorus, that is to say, the symptoms begin after digestion has ceased, some hours after food, and this also explains the fact that these cases are often relieved by taking food, so that the patient may ascribe all his symptoms to hunger.

There are two other symptoms which, when they appear, are characteristic of the hypertonic form—namely, heartburn and pyrosis—the gushing of alkaline fluid from the mouth being presumably an attempt of nature to deal with the trouble by the secretion of a super-alkaline saliva.

In the atonic form the lack of acid is probably always associated with decreased motility; the food remaining too long in the organ, becomes, as it were, a foreign body, and calls forth a profuse mucous secretion from the stomach, which probably never becomes properly emptied and clean; therefore the symptoms appear as soon as the food enters the stomach and remain more or less intense until the time for the next meal.

Occasionally home remedies which the patient has tried may help in diagnosis. Partial relief obtained from bicarbonate of soda points to the hypertonic form; from acid fruits, such as oranges, to the atonic. Sometimes no definite diagnosis can be made till the effect of drugs has been tried. Under such circumstances it is always wise to treat all doubtful cases as atonic; since an error in this direction causes less discomfort to the patient than the exhibition of acids would in the hypertonic form.

TREATMENT.

In the treatment of dyspepsia there are two indications common to both varieties—(a) attention to the teeth where necessary, and (b) correction of constipation. Apart from this the treatment of each variety is distinct.

General Treatment consists of rest in bed for a few days in aggravated cases, and, where possible, in freedom from mental worry, overwork (especially where associated with hurried mastication), and removal from uncongenial surroundings.

In the hypertonic form hot baths and Turkish baths do good in promoting excretion from the skin, since it is probable that the condition is associated with some kind of auto-intoxication by absorption from the intestine. Vigorous exercise is also indicated in these cases for the same reason.

In the atonic type, abdominal massage and graduated exercises, such as are used in ordinary chlorosis, are useful.

DIET.

In the causation of functional dyspepsia, diet probably has much less to do than would appear at first sight, with a few exceptions. For instance, it is probable that excessive meat-eating, especially when combined with a free consumption of alcohol, and when associated with lack of sufficient exercise, predisposes to the hypertonic form and to the high arterial tension associated with it, while common salt probably assists in the production of the acid in the gastric juice, and condiments—mustard, etc.—stimulate its excessive secretion. Therefore in the dietetic treatment of dyspepsia, where there is no actual gastritis present, the indications are few—limitation of meat and alcohol in hypertonic cases, with substitution of boiled meat for roast and exclusion of salt and condiments, and in atonic cases a “dry” diet with exclusion of green vegetables, which aggravate flatulence and addition of alcohol daily to one of the meals. By a “dry” diet is meant avoidance of “slops,” which again tend to increase flatulence, and the substitution of dried bread or hard dry toast for ordinary soft bread.

DRUGS.

The first indication is the treatment of the constipation, and for this the best aperient in all cases to begin with is calomel. In hypertonic cases associated with high-tension pulse, its use may be continued for a week in fractional doses (gr. $\frac{1}{8}$ - $\frac{1}{4}$) every night, assisted by dram doses of sodium sulphate in half a pint of water every morning. It is a detail of some importance to withhold natural mineral waters in these cases, inasmuch as they contain considerable quantities of sodium chloride, and are therefore indicated in the atonic form, though here calomel should not be continued, being replaced by some such drug as cascara.

Coming to drugs which are intended to act directly upon the stomach, the important point is that they must be administered after food;

if they are to modify the course of digestion they must be given during digestion. Administration of alkalies before meals, with or without the bitter infusions, is good, but simply from the point of view of lavage; and is therefore equally good in either variety, and to be most effective must be given in half a pint of water.

INDICATIONS FOR ALKALIES.

In the hypertonic cases, then, the obvious cry is for alkalies, the best being sod. bicarb. and bismuth carbonate in combination, and given in large doses. Probably it is useless to give less than 20 gr. of the bismuth salt as a dose, or, if the fluid form is used, the B. P. liq. bismuth et ammon. cit.—using 2 drachms as a minimum dose—with either a sedative such as HCN may be combined. Bismuth is also administered in the form of lozenges given when the pain comes on. These probably act mechanically to a certain extent at least, causing an increased flow of alkaline saliva, since the amount of bismuth in them is too small to have much effect, and also the pain may be to some extent relieved by sucking any hard substance, such as a pebble. If there is any gouty tendency, guaiacol may be separately administered in cachets.

ACIDS.

In the atonic cases the important drug is hydrochloric acid. It must be remembered in prescribing HCl that in many of these cases the gastric mucosa is in an irritable condition, and many therefore need the addition of morphia in the form of liq. morphia hydrochlor to enable it to stand the acid. The morphia salt should, of course, be withdrawn as soon as possible. The mixture may be made up with a bitter and a carminative, such as peppermint or ginger; sometimes pepsin may be added, though its advantages seem to be disputed.

AFTER-TREATMENT.

It must be remembered that when the acute stage has passed off the patient still has the tendency to relapse as soon as treatment is stopped, because the dyspepsia is merely the symptom of an underlying cause. Most cases of hypertonic dyspepsia are associated with a raised arterial tension tending to actual arterio-sclerosis, and in these a partial vegetarian diet should be advised, with considerable restriction of alcohol, and in the more intractable cases a more or less prolonged course of iodides with potass. citrate and an occasional short course of fractional doses of calomel. In the atonic form the underlying cause is debility, usually associated with some such condition as convalescence from acute illness, prolonged mental worry, or overwork, and often with anæmia.

It will be found in actual practice that diagnosis and treatment are often not quite so straightforward and simple as they appear upon paper. It must be remembered that we are depending almost entirely upon subjective symptoms for diagnosis, and that patients are apt to exaggerate and make misleading statements. There are certainly some cases where no organic lesion can be discovered, and yet they cannot be made to fall under either of the classes described, as, for instance, the true neuralgia of the stomach, known as gastralgia; but nevertheless it will be found that by approaching cases of functional dyspepsia on some such lines as those indicated there will be fewer disappointments both for patient and doctor.—*The Hospital*.

Continuous Inhalation in Laryngeal Tuberculosis.

DUNDAS GRANT, M.D., F.R.C.S.—It may be doubted whether a few drops of creosote under the nose give off sufficient antiseptic vapour to reach the bacilli in the depths of the pulmonary tissue, and the too rigid scientist may feel inclined to discard this simple and efficacious treatment. His half-hearted recommendation may fail to overcome the fastidious patient's objections to the "nasty stuff." This would be regrettable, as the method, whether it be the main factor or merely an adjuvant, has proved valuable. In many cases of laryngeal tuberculosis the writer prescribes it and with great relief, but to many the smell of creosote is unpleasant. The writer has found the following combination efficacious and not unpleasant:—

Creosoti, ʒii.

Ol. Pin. Sylvest.

Spirit. Chloroformi, āā ʒiiss.

Menthol, gr. x.

Ol. Cinnam., m.v.

The sponge in the respirator (Dr. Burney Yeo's) is kept moist with this mixture. To most people this is by no means unpleasant, but a few dislike the smell and flavour of cinnamon, and then oil of citronella may be substituted.

The most conspicuous result is diminution of the cough, and apart from any antiseptic or bactericidal effect this is a very important factor in the production of subjective as well as of objective improvement observable in the larynx. There is probably nothing more disturbing, and injurious to the larynx than frequent or continuous coughing, or more certain to induce repeated "auto-inoculation" than the muscular strain which it involves. The "rest" induced by this simple remedy is there-

fore valuable, whatever its *modus operandi*. It has none of the objections attaching to those remedies which paralyse the coughing-centre as it only checks the useless and not the useful coughs. In pulmonary tuberculosis it has also been found useful. *The Medical Review*.

Thyroid Extract in Nocturnal Enuresis.

D. KONRADI:—A perusal of the literature on the treatment of nocturnal enuresis shows that there is no one satisfactory method, and this is inevitable as several different factors may cause the condition. One of these is faulty internal secretion, a condition which LEONARD WILLIAMS pointed out and treated by the administration of thyroid extract. His report led the writer to apply this treatment to cases which had been refractory to other methods. The condition was cured in 2 cases, and it was much relieved in a third. In 2 other cases slight improvement followed. This treatment is therefore clearly not of general use, but it deserves trial even when the patient has an apparently healthy thyroid, as nothing abnormal could be found in this organ even among the patients who benefitted by the treatment. By disturbance of the internal secretion of other organs of the body the condition may arise, and it is therefore by the administration of extracts of various glands that a more successful system of treatment may be found. The writer shows that the composition of the blood in cases of nocturnal enuresis is abnormal, and that the value of iodine, iron and arsenic in this complaint is due to their action on the blood-forming organs.—*Ibid*.

SURGERY.

Ascites.

Treatment.—Adrenalin injected intraperitoneally in 2 cases. Case I. Chronic parenchymatous nephritis and mitral regurgitation. Nine injections of 1 : 1000 solution, beginning with 0.5 c.c. (7½ minims), rapidly increased to 2 c.c., given in 2 weeks' time; the first 5 injections on successive days. Ascites barely demonstrable after 6th injection. Gradual rise in urinary output. Progressive improvement subsequently. Case II. Carcinoma, probably gastric. Twelve injections of 2 to 4 c.c. No improvement.—*Monthly Cyclopædia & Medical Bulletin*.

An Address on Hemorrhoids.

E. HANMORE BISHOP, Manchester. In this address Bishop defends strongly the much criticized Whitehead operation—"the only one which entirely removes the dilated and dilatable structures, thus ensuring future

immunity." After considering the anatomical features of hemorrhoids, and deducing therefrom the *rationale*, in his view, of the Whitehead operation, Bishop emphasizes, first, the importance of thorough preliminary dilatation of the sphincter.

Secondly, as the dilated venous loops cling most closely to the inner lining membrane they are easily cleared away from the loose subcutaneous tissue around the sphincter. All loops which have insinuated themselves between the outer skin and sphincter muscle must be removed, and the entire sphincter should be clearly defined before any attempt at transverse section of the collar so isolated is made.

Thirdly, there must be no attempt to look up the bowels after these operations. Fæces will have to be passed sooner or later. Which is the wisest: to secure the regular passage of small quantities which are soft and easily molded, or to wait until these amounts have accumulated into large, hard, irregularly shaped masses, certain when they once come within the sphincteric grip to be forced through with all the reckless force which one knows will then be exerted? Which is the most likely to tear through the soft uniting line and to leave the raw surface which must cicatrize?

If the sutures are passed through unreliable tissue they are almost certain to tear through and raw patches become exposed, but the true Whitehead operation, properly carried out, ensures that all round the anus tough submucosa will be united to skin, opposing an impervious barrier to any infective particles which are likely to come in contact with it. It is not infection, but injury, against which we have to guard in the post-operative treatment.

It is easy to keep this uniting line clean by warm mildly antiseptic douches after any passage of fæces.

The action of the bowels should therefore be ensured from the first by the giving of some mild laxative such as confection of senna, liquorice powder, or a saline.

Of simple hemorrhoids operated upon by Whitehead's method, Bishop had 127 cases—78 males and 49 females. There has been no mortality. With one exception he never saw organic stricture following one of his own cases. He did note in some seven cases about the third week a thin contraction like a fine thread at the line of union. This is dilatable with great ease if detected at once, and once dilated does not return. It appears to be due to some idiosyncrasy on the part of the individual, since in 120 cases it never occurred. It is a matter of no moment, since it is so easily remedied.

The case in which organic stricture did follow was one simply due to faulty technique. The patient was a man with old eudocardial mischief; the anæsthetist was not very experienced, and during the operation it became evident that he was in difficulty and extremely anxious; the latter part of the work was consequently hurried; the skin and submucosa were not well united; a month later the patient returned with a tight anus; the mucosa had evidently retracted and there was a well-marked ring of scar tissue around the lower end of the anal canal, a very typical example of the so-called "incurable organic stricture." The scar tissue was dissected out, leaving the sphincter and skin intact, after which the mucosa, of which there is always plenty, was freely loosened, brought down, and firmly fixed by sutures, which, passing through the tough submucosa, held it securely until healing was complete. This time the result was all that could be wished, and no sign of relapse has since been seen; the anus has functionated perfectly. The last operation was eight months since. Since this case Bishop operated upon another, the primary operation having been done by another surgeon, in the same way with the same result.

This, then, is the reply to the "incurable stricture" indictment. It is, of course, possible that, in consequence of some incredibly bad technique, a condition might be produced which might be beyond remedy, but such a result could not fairly be attributed to the Whitehead operation, while in most cases the removal of scar tissue, the free loosening of mucosa, and especially of submucosa, and its careful union with the skin below will ensure success.—*American Journal of Surgery*.

Hernia in Children.

In a contribution, DR. SAVARIAUD discusses the question of treatment of hernia in young children. He is strongly in favour of operation at quite an early age, even as young as two. He maintains that this is justifiable because with the disinfection of the skin with tincture of iodine, the use of gloves, and the other usual precautions, one can make quite sure of a perfect primary union, and, further, the operation on a young child is so simple that it can be carried out in ten minutes, involving no serious risk of shock to the small patient. According to DR. SAVARIAUD, the operation can be carried out in this space of time without undue haste and without any attempt at surgical acrobatics. He describes his method of operating for inguinal hernia in young children thus: Having found the hernial orifice with the finger, a skin incision is made over it 4 cm. long. The subcutaneous fat is separated down to the cord. No attempt is made

isolate this by dissection, but by pressing on the scrotum the testicle is made to appear in the wound. This is seized and the cord drawn upon and rapidly isolated with the finger. By stretching the cord between two fingers the sac is quickly recognised by its transparency and whitish colour. This is isolated with the fingers, without the use of any instrument, and then held with fine forceps and dissected out as high up as possible. Two sutures are placed through the pillars of the inguinal ring and three through the skin, and the operation is completed. For children above four years of age the author performs Bassini's operation, but for younger children he considers the method just described sufficient, and it has the advantage of simplicity and rapidity.—*The Hospital*.

Eustachian Catheterism.

At a meeting of the *Academie de Medecine* DR. LERMOYEZ discussed the use and abuse of the Eustachian catheter. He considers that it is employed much too indiscriminately. It is often useless, sometimes dangerous. In acute otitis media it increases pain, favours a spread of the infection, and may make it light up again when it is already receding. In chronic catarrhal otitis media it may be of some service, provided it is only used during the subsidence of a sub-acute attack, but it is especially to be avoided in chronic dry otitis media, and more particularly in the juvenile otosclerosis which often attacks young girls and leads to complete deafness. It may set up subjective noises or increase the intensity of those already existing, and it may accelerate the progress of deafness. Catheterism of the Eustachian tube should therefore be reserved only for catarrhal otitis media during convalescence, and even in such cases attention to the nose is of chief importance in the cure of the affection. In the question of the treatment of deafness there are far more contra-indications than indications for the use of the Eustachian catheter. Not 90 per cent. but rather 10 per cent. of those suffering from deafness are amenable to catheter treatment. Such in brief outline is the teaching of DR. LERMOYEZ.—*Ibid.*

An easy and Painless Method of Removing Adhesive Plaster.

E.J.G. BEARDSLEY, M.D.—Such a simple and frequent procedure as the removal of adhesive plaster is not infrequently painful. Especially is this true if the plaster has been placed over hairy surfaces, or if the hair has grown subsequent to the application of the plaster. The

usual methods of aiding the removal of the plaster by benzine, alcohol, and peroxide of hydrogen are not very effectual and these agents often add to the patient's discomfort.

The writer discovered by accident that oil of wintergreen when applied to adhesive plaster removed completely the adhesive elements in a short time, and has found this agent most useful. It is necessary to use only a small amount of the oil, which is applied directly to the plaster and easily spreads throughout the adhesive material. When extensive areas of plaster are to be removed the application of an ointment of *adeps lanæ hydrosus* with 10 per cent. of oil of wintergreen incorporated is even more useful than the oil alone.—*The Medical Review*.

Sweating and Anæsthesia.

Sweating occurs under two conditions during anæsthesia. In the first case it is very often seen during the induction stage, when the patient is breathing stertorously, and it is then usually associated with a flushed warm skin. In the other case it occurs late in the anæsthesia, and is entirely different in type from the former. The skin is then generally pale and very cold, and the sweat appears in beads all over the body, more particularly on the forehead.

THE CAUSE OF SWEATING.

Physiologists tell us that the blood pressure has nothing to do with the secretion of sweat, but whether this be so or not, these two forms of sweating occur, the one when the blood pressure is high, and the other when it is low. The first form is particularly liable to occur in fat, heavily built people, and is seen more particularly when ether is the anæsthetic used. It is more likely also to come on when there is some degree of cyanosis. This form is associated with marked muscular action, and this is the reason why some surgeons do not like ether as an anæsthetic, because they say that the preliminary stimulation reacts on the patient later.

When a preliminary dose of one of the opium compounds now so frequently used as concomitants to general anæsthesia has been given, sweating is much more common. For example, when morphine has been used without atropine, sweating of the uncovered parts more especially is marked; with atropine in combination it is not so striking. With the newer opium derivatives, such as pleistopon and pantopon, sweating may on occasion prove troublesome, the patient's shirt becoming almost saturated. This is especially the case when no oxygen is administered at the same time as the anæsthetic, and when open ether is given in combination with pantopon or scopo-morphine.

THE IMPORTANCE OF THE SECOND TYPE.

The other form of sweating is of much greater surgical importance. It occurs when the blood pressure is low, and is a sign that shock or collapse will shortly supervene, and therefore it is a thing which the anæsthetist will always be anxious about, particularly if it occur early in a long operation. Its importance lies in that it is an indication of serious vascular disturbance rather than in the mere fact of its occurrence. It should always be a sign for which the administrator should be on the look-out; as soon as it is observed steps should be taken to combat shock by injection of fluid into the system and by raising the blood pressure with such drugs as pituitary extract. It is better, however, rather to prevent its occurrence by putting the fluid into the patient before the operation than by trying to treat the shock after the sweating has already occurred. For that reason the anæsthetist should examine his patient carefully before giving the anæsthetic, not merely with regard to lung and heart conditions, but also with regard to blood pressure and liability to shock. This last is, of course, exceedingly difficult to estimate, but practice and experience will enable the anæsthetist to recognize, just as easily as the experienced surgeon does, those cases in which prophylactic measures should be taken to obviate any danger from shock.—*The Canadian Practitioner & Review.*

Iodine Disinfection of Wounds.

BY

CHARLES F. NIEDER, M. D.

GENEVA, N. Y.

During the past seven years I have used tincture of iodine almost exclusively in disinfecting minor wounds, and have found it so satisfactory after using it in hundreds of cases that I feel my experience may be of some benefit to others.

Tincture of iodine was used to prevent infection of slight abrasions on my own hands when handling infectious cases, and it was noted that such small abrasions healed very quickly after the application of the iodine. The inflammatory reaction which would sometimes occur was almost invariably prevented. The iodine was then used in treating nearly all minor wounds. The following cases are cited out of many:—

Case 1.—Boy who had stepped on a rusty nail two days previously, puncturing the ball of the foot through to the skin on top. The foot was very badly swollen and very painful, the wound being infected. A small incision was made through the skin on the back of the foot and

the small ear curette passed entirely through the wound, cleaning out particles of dirt. A very narrow strip of gauze was twisted, dipped in tincture of iodine and passed through the wound. On the following day the pain and swelling were gone. The gauze was left in another day when it was removed and the recovery was rapid.

Case 2.—Boy who had the palm of the hand badly lacerated by a blank cartridge. The wound was cleaned out, pieces of wadding being removed from between and even behind the metacarpal bones. The wound was swabbed out with iodine. An immunizing dose of tetanus antitoxin was given in this case. There was rapid recovery, with no sign of infection.

Case 3.—Man with bullet wound through the thickest part of the hand, caused by the accidental discharge of his revolver while cleaning it. Particles of skin were removed from the wound at the point of entrance; then a narrow strip of gauze saturated with iodine was passed through between the metacarpals from the point of exit and allowed to remain two days, when it was drawn part way through, allowing the wound of exit to close, and on the following day removed entirely. The patient returned to work five days after the accident.

Case 4.—Bullet wound of hand which had been treated for three weeks, being irrigated with peroxide and packed with gauze. It was then discharging pus freely from both entrance and exit. It was swabbed out with tincture of iodine, followed by rapid disappearance of the pus and healed promptly.

Care must be used in applying iodine to large wounds as it would be possible to get sufficient absorption to cause poisoning. The chief objection to the use of iodine is the sharp burning sensation when it is applied, but this lasts only a short time. Another objection is that the patient knows what you are using, but this applies to bichloride, carbolic acid and hydrogen peroxide. The fact that during the past four years the use of iodine has become almost universal in preparing the skin for major operations—and its efficiency for this purpose is practically unquestioned—is pretty good evidence of its prompt action as a disinfectant.

What I wish to do in this brief paper is to call to the mind of the general practitioner the fact that the use of iodine is not to be restricted to its use after curettement of the uterus, a practice which has been common for many years, but that it is the best disinfectant in minor wounds to be had, and that disinfection of a wound can be more readily effected by swabbing with iodine than with solutions of bichloride or

carbolic acid, and so far as healing is concerned, it is more prompt than after either of the others.

Puncture wounds caused by nails, etc., should be treated by enlarging the opening through the skin, cleaning out the wound with a small ear curette and introducing a narrow strip of gauze which has been twisted and dipped in iodine, allowing the gauze to remain two or three days. All through-and-through bullet wounds of the extremities, where the course of the missile can be followed with a probe, should be treated by passing a narrow strip of gauze saturated with iodine and allowing this to remain two to four days.

In treating wounds requiring sutures, the skin along the edges of the wound is painted with iodine, thereby preventing stitch abscesses.

My experience leads me to believe that iodine will soon displace all other antiseptics used in disinfecting wounds.—*New York State Journal of Medicine.*

On Position During Anæsthesia.

When nitrous oxide or ethyl-chloride is to be administered in the sitting position, the anæsthetist should direct the patient to sit well back in the chair and to clasp the hands between the knees. The elbows should not be rested on the arms of the chair, nor the feet planted firmly against the foot-rest nor on the ground, as in case of stiffening occurring such support will enable him to rise out of position. It is advisable to have a strap or band to secure the legs to the chair and another passing from the back of the chair round the haunches, the fastenings of which should be such that they can be instantly undone, for, apart from rigidity, semivoluntary struggling may occur during partial anæsthesia and much damage may be caused. The head should be supported in an upright and unconstrained position. Opportunity should be taken to bend the head and shoulders forward if there is bleeding within the mouth, nose, or throat, and this position should be maintained if re-administration is required in such cases, taking care that blood and mucus does not collect in the face-piece and obstruct breathing.

For most operations the patient should lie on the back during induction. The arms should be extended by the sides under the blanket, which should be well tucked round them. Usually one or two pillows are preferred, which may be afterwards removed if advisable. The head should be turned to one side, cough being less likely to be caused and mucus escaping more readily. When fully anæsthetised, if this position

is to be maintained the arms must be secured out of the operator's way. Usually they can remain by the sides with the extended hands partly underneath the buttocks, or a length of bandage may be passed under the loins and looped round the wrists. If the table is very narrow, or for some other reason this is not convenient, the wrists should be fastened up near the shoulders by a length of bandage passed under the shoulder-blades, by lengths tying them to the table, or by safety-pins through the sleeves. The hands should not lie nor be clasped on the chest, as they are apt to be in the surgeon's way or to slip down, besides interfering with respiratory movement. The anæsthetist should see that there is no great weight of folded night clothing, blankets, macintoshes, etc., on the patient's chest. If the elbows are flexed he should remember that the radial pulses may be thereby diminished or obliterated, and do not indicate the state of the circulation.

The arms must never be allowed to hang down—pressure against the edges of the table may cause paralysis. Nor should they be over-extended with the head turned to the opposite side in operations on the breast and axilla. This again may have the effect of stretching or nipping nerve trunks injuriously. The abdominal muscles are better relaxed if the knees are fixed on a pillow and the shoulders slightly raised. A cushion under the pelvis or under the lower ribs (sometimes required) may embarrass breathing by straining the recti and throwing the abdominal viscera on the diaphragm.

A patient suffering from orthopnoea or otherwise unable to lie completely down must, of course, be anæsthetised in that position which is necessary. In some cases, e.g., evacuation of fluid, it may be possible to modify it by degrees later on.

With head extended over table-edge: this is seldom now used. Formerly employed with a view to prevent inhalation of blood during operations for cleft palate and for removal of adenoids, it has been found not to do so—hæmorrhage is increased, and the nose becoming blocked by coagula the blood does not run out. It is also apt to interfere with free breathing by stretching the trachea, straining all the structures of the neck, and fixing the chest. If required for bronchoscopy, etc., some support should be given to the head.

The Trendelenburg position is unsuitable for obese and florid patients and those suffering from respiratory difficulties or arterial degeneration. It is rather apt to increase lingual and laryngeal spasm and rigidity of the abdominal muscles and to cause respiratory obstruction by the tongue becoming engorged or falling against the palate

Ether, especially with a bag-inhaler, is therefore unsuitable in most cases, and fortunately there is in this position far less risk of shock, reflex or otherwise, so that chloroform-ether mixture may be given with more confidence. The anæsthetist should see that the knees are at the right level for flexion over the angle of the table when this is adjusted, and that the shoulder-rests are in proper position. The neck should be slightly flexed and the head supported on a pillow which may rest on the knees of the anæsthetist, who should sit on a low stool. Great care should be taken to avoid sudden raising at the conclusion of the operation, especially in anæmic and exhausted subjects.

In the lithotomy or perineal position the strap should be passed under the arm-pit of the side to which the head is turned. The anæsthetist must steady the head when the patient is moved down the table. Care should be taken that when the thighs are flexed no pressure is made on the abdomen by thick folds of blanket.

In lateral and latero-prone positions the breathing is hampered by the body-weight falling on the lower side of the trunk, especially when a cushion is put under the flank as in kidney operations. There may also be interference with expansion of the chest on the uppermost side, as in the case of a kidney tumour interfering with the action of the diaphragm, or in empyema. In the lateral position the uppermost arm should be supported on Braine's arm-rest, or (if this is not at hand) on a box or something similar placed on a support at the side of the table. In the latero-prone position the arm should be raised on a pillow. Care should be taken that the other arm is not crushed under the body.—*The Hospital*.

OBSTETRICS AND GYNÆCOLOGY.

Eclampsia.

CRAGIN and HULL advocate the use of ether as an anæsthetic in eclampsia. From their observation on patients and experiments on dogs they are convinced that chloroform should be entirely abandoned and ether substituted. In twenty cases of eclampsia, treated at the Sloane Maternity Hospital, no attempt has been made to control the convulsions by means of the anæsthetic. This end has been sought through lowering the blood pressure and quieting the nervous system by the use of veratrum, chloral, and nitroglycerine. Ether has been used whenever an anæsthetic has been required during the delivery. Former experiences with attempts to control the convulsions by chloroform proved that it was practically impossible. Recent experiences without attempts to

control the convulsions by an anæsthetic have given results which compare favorably with those of former methods. Of these twenty patients only one died, and she was practically moribund when brought to the hospital, with jaundice, vomiting, scanty and bloody urine, and with the liver necrotic. This gives a mortality of five per cent. In the last twenty cases of eclampsia in which chloroform was used there were five deaths, a mortality of twenty-five per cent. In a series of 20,000 deliveries previous to this last year there were 251 cases of eclampsia, with a mortality of seventy-one, i.e., twenty-eight per cent. DAVIS and FOULKROD state that eclampsia is a distinct disease, with varied manifestations and a definite pathological picture. There is some relation between the fact that an altered nitrogen ratio is found in the excretions, and the fact that the liver is the organ most seriously involved. A study of this progressive nitrogen disturbance may prove a guide as to the point beyond which the liver involvement cannot go and allow regeneration and recovery. While no placental theory has yet been proved, the most plausible theory is that some ferment from the placenta may prove responsible as a primary cause for the condition because of deficient or deranged action. Any pre-existing permanent pathological condition may prove an exciting cause, and still perhaps act by disturbing placental function. Eclampsia should be a rare condition in the hands of a skilful, thorough investigator.—*The Canadian Practitioner and Review*.

Œdema of the Leg Due to a Small Ovarian Cyst.—

PROF. J. F. W. ROSS and A. C. HENDRICH.—A woman, aged 41, was admitted to hospital on Feb. 20, 1911. She had been married 19 years and had no children. Menstruation was regular until Nov., 1910, when it stopped, but slight bleeding at the time of the periods occurred in Jan. and Feb., 1911. In Jan. she was ill and confined to bed and was treated for anæmia and hysteria. When she got up she could scarcely walk, had much pain in the lower abdomen, and noticed that the left leg was commencing to swell.

The left leg was enormously swollen from the toes to the groin, being almost one-third larger than the right. There was no inflammatory reaction such as might have been expected in phlegmasia or phlebitis. Obstruction of the iliac vessels by metastatic growths in the iliac glands suggested itself. Bimanual examination did not reveal any growth in the uterus but a tense slightly fluctuating mass to the left of the uterus low in the pelvis. Incarcerated ovarian cyst was diagnosed and laparotomy was performed.

The great size of the superficial and the deep plexus of veins was very noticeable, and bleeding was so great from them that they were ligatured. This enlargement was due to the established collateral circulation. On putting the patient in the Trendelenburg posture and packing back the intestines with sponges, a tumour, about the size of a large orange, was found to the left of the uterus and deep in the pelvis. It was an ovarian cyst which had become sub-ligamentous and was firmly bound down by adhesions to the rectum and the lateral wall of the pelvis. These adhesions held the tumour lightly against the lateral walls of the true pelvis, and compressed the iliac veins, both internal and external. The tumour was freed from its adhesions, being peeled up from within, keeping close to the uterus and from below, keeping well away from the dilated pelvic veins. It proved to be a subligamentous unilocular ovarian cyst about 2½ in. in diameter containing a clear, translucent fluid. It was removed without rupture and the abdomen closed. The patient was kept quite for a number of days for fear of pulmonary embolism after freeing the pressure upon the veins. Recovery ensued. The swelling in the leg disappeared in 2 weeks.

The chief interest in the case lies in the swelling of the leg. For an ovarian cyst about the size of an orange to cause so much venous obstruction is unusual. This was due to its being bound down to the wall of the pelvis.—*The Medical Review*.

TOXICOLOGY.

Santonin, Dangers of.

The author comments upon cases recently reported by Baxter and by Freyer, illustrating possible untoward results from the use of santonin and male fern. He points out that the accidents observed in their cases were due simply to improper methods of administering the drugs. Baxter had given santonin in solution in castor oil, the patient subsequently becoming blind, while Freyer had administered a dose of castor oil before giving the vermifuge. Oily substances bring these drugs into solution, and, therefore favour their absorption into the general system. Santonin is not absorbed when administered in powder form, and hence exerts no toxic effects, though acting on the parasites.—*Monthly Cyclopaedia & Medical Bulletin*.

THE ANTISEPTIC.

JULY, 1911.

Hospital Abuses in Madras.



THE practice of receiving patients who can afford to pay for their medical or surgical treatment into the State hospitals in Madras—into the out-patients' department, the general wards and the special pay wards of these hospitals on payment of nominal hospital stoppages which would be just sufficient to pay for their maintenance in the hospital, while receiving medical or surgical treatment gratis—has very injuriously affected the interests of private medical men in this city. The 'pay system' in hospitals is a comparatively modern innovation. The primary object for which hospitals were established was for the gratuitous medical and surgical treatment of the indigent sick. And in England, even at the beginning of the nineteenth century, hospitals only took in 'cases grave enough in the judgment of its officers, to need treatment in the wards.' There was no system of out-patients in those days, and trivial cases got no hospital relief.

The out-patient system whereby all and sundry received gratuitous medical relief, however trivial their ailments and however well filled their purses, began in the English hospitals some time about 1830, and since then began that lamentable competition between the different hospitals and between the hospitals and the general medical practitioners, which even to this day contributes very largely to some at least of the items included in the well-known general term 'hospital abuses.' And the so-called 'pay system' had its origin in the recognition of the fact that 'there is a large class above the very poor who are but ill able to afford the most skilled attendance and nursing at their own homes, which in most cases do not supply the accommodation necessary for sickness.' In Madras, however, the various branches of the hospital system, though framed on English models, owe their developments to different causes. When the British Government in India first decided to give its sick Indian subjects the benefits of scientific western medical aid, there was none in this country skilled in European medical science. Doctors had to be brought from England to man the various medical institutions, and they had also to undertake the training of a number of Indians to discharge subordinate medical duties. In those days Indians who were trained as medical subordinates were barely sufficient to fill the Government posts, and qualified private medical practitioners were unknown. While in England most of the great hospitals owe their origin to the

enterprise and self-sacrifice of eminent members of the medical profession, in India 'the independent medical profession' owes its origin to the great State hospitals—those everlasting monuments of British benevolence and generosity. Under these conditions it was no wonder that the Indian hospitals opened their out-patients' department to every one, rich and poor alike. But that was long ago. Fifty years of progress and education have altered the position of the medical profession in India. In large cities like those of Calcutta and Bombay, there are over 700 qualified private medical practitioners, and even in Madras we have over 100 qualified private medical practitioners, not to speak of the medical men in Government employ who are entitled to take private practice. At the same time, patients attending the out-patients' department of hospitals have increased by leaps and bounds. We may point out that the majority of the patients attending the out-patients' department of State hospitals in Madras suffer from trivial complaints which can very well be treated by the ordinary qualified general practitioner. And most of them can very well afford to pay the fees of a general practitioner, for Madras has, as every big city is bound to have, medical men who correspond to the 'six-penny medical man' in London. In all ordinary ailments a patient is pretty certain to get more attention and better treatment from the private practitioner who charges a moderate fee, than from the over-worked physician in charge of the out-patients at a big hospital, or the fourth year's student into whose hands he is just as likely to fall. The competition of the out-patients' departments of the State hospitals is ruining the poorer class of general practitioners who are content to charge a fee of 8 annas or 1 rupee for advice. For as the late Sir Morell Mackenzie once put it "however much the poor general practitioners may lower their fees, they must still be in the same position relatively to those institutions (hospitals) as the gentleman who stole the raw material for his baskets was to his rival who 'conveyed' his baskets ready made." We venture to think that the time has come for stopping the indiscriminate granting of medical relief in the out-patients' departments of State hospitals in big cities. A hospital is not intended for the home treatment of the poor. It would not be unfair to lay down a rule that none whose income is over Rs. 25 a month has a right to get medical advice and medicine at the out-patients' department of a hospital. Over and above affording medical relief to the poor as defined above, the doctor in charge of the out-patients' department ought to be a consultant to the class above the very poor who are under the treatment of general practitioners.

In cases where the advice of consultants is required, general practitioners are always ready and willing to secure such advice. But in the

case of the poorer class of patients who are unable to pay the legitimately high fees paid to leading consultants, access to the out-patients' department or to the wards of a State hospital ought to be given gratuitously on the recommendation of the general practitioners. Reforms on the above-suggested lines will relieve the congestion in the out-patients' department, and will also abolish the existing unfair State competition with the poorer class of private medical practitioners. In dealing with the out-patients' department, we have confined our observations to patients suffering from comparatively simple ailments. Extraordinary occasions, such as a severe surgical operation, or prolonged and serious illness, stand on a somewhat different footing. In these classes of cases highly skilled medical assistance and efficient nursing are essential. To supply these to the sufferers who cannot afford to procure them by payment, it will be not only a justifiable action on the part of the State, but we would even venture to say is the duty of the State. But the task of drawing a line between the rich and poor—for purposes of hospital relief—is not a very easy one. In fixing a standard, not only the income of the patient has to be taken into consideration, but also the scale of fees charged by physicians and surgeons in this city as well as Nursing Home charges must be taken into account. Without going into the details of these expenditures, a general proposition may be laid down that any one who has a monthly income higher than the total expenditure that is likely to be required for a month's medical or surgical treatment by the leading medical men in Madras, together with the monthly charges of a first-class Nursing Home, has no right to receive hospital treatment.

We beg to draw attention to the fact that the present rules regarding hospital stoppages make no such attempt to exclude the very rich from being admitted to the special pay wards of State hospitals. The present rates for hospital stoppages are as follows:—

Monthly income of the patient or head of a family.	Scale of daily charges for Gov- ernment officials.	Scale of daily charges for non-officials.
1	2	3
<i>Europeans and Eurasians.</i>		
Minimum	Rs. A. P. 3 0 0	Rs. A. P. 4 0 0
300 to 399	4 0 0	4 8 0
400 to 499	5 0 0	5 8 0
500 to 599	6 0 0	7 0 0
600 to 699	7 0 0	8 8 0
700 to 799	8 0 0	10 0 0
800 to 899	9 0 0	11 8 0
900 to 999	10 0 0	13 0 0
1,000 to 1,099	11 0 0	14 8 0
1,100 and above	12 0 0	16 0 0

Monthly income of the patient or head of a family.	Scale of daily charges for Gov- ernment officials	Scale of daily charges for non-officials.
1	2	3
<i>Natives.</i>		
Minimum	0 8 0	0 12 0
50 to 74	0 12 0	1 0 0
75 to 99	1 0 0	1 8 0
100 to 149	1 8 0	2 0 0
150 to 199	2 0 0	3 0 0
200 to 299	3 0 0	4 0 0
300 and above	The rates for Europeans and Eurasians.	

According to that scale it is open to the richest man in the Presidency to get admitted into the General Hospital pay wards and to get the best medical or surgical treatment available in this city, with efficient nursing, good food, and comfortable accommodation with all modern conveniences, all for Rs. 16 a day—which is what he will have to pay in a first-class hotel. In other words any one can get medical treatment and maintenance in the State hospitals in Madras by paying for the maintenance only.

No doubt many will be willing to pay for their bread and cheese on the terms of paying for their bread alone. We are of opinion that the present arrangement is exceedingly unfair to the hospital physicians and surgeons, and a great deal more unfair to the better class of private medical practitioners. The physicians and surgeons of the State hospitals are all drawn from the ranks of the Indian Medical Service, and these appointments are considered to be among the prizes of the service.

The candidates who compete for the Indian Medical Service are tempted as much by the prospect of lucrative private practice as by the rules regarding pay and pension. And to close the highest field for private practice for them by compelling them to attend on all the rich people in the country—not only officials but non-officials too—without any remuneration will seriously diminish the attractions offered by the Indian Medical Service, and will result in the future in an inferior class of medical men coming into the service to the great detriment of the interests of this country. On the other hand, if the State undertakes to provide free medical aid—we say free medical aid advisedly for the hospital stoppages in the pay wards do not cover anything more than maintenance, nursing and medicine—for every one irrespective of his financial position, then the development of private medical practice in its higher branches will be most effectively checked.

That, we venture to think cannot possibly be the object of the State—especially at the present time when the policy of encouraging the formation of an independent medical profession in India has been officially proclaimed. By what other means can the State encourage the development of an independent medical profession than by ensuring fair competition? Offering Government appointments to private medical practitioners would, in course of time, create a *dependent* medical profession and destroy the independent medical profession. Under existing conditions no private medical practitioner who has a practice worth the name will ever think of accepting an honorary appointment on the staff of a State hospital. If he does, he will probably find all the patients who used to pay him for his advice, previous to his accepting an honorary appointment on the hospital staff, coming up to him at the hospital to receive his advice gratis. This unfair State competition with private medical practice is an effective bar to the development of an independent medical profession in this city, and in our opinion nothing that the Government can ever do will have the slightest effect in encouraging the development of an independent medical profession unless and until this unfair State competition is done away with. It is the same with the professions as it is with industries—the best encouragement they can be given is the removal of unfair competition.

It has been said that the best surgical skill can only be got in the hospitals. Those who are of that opinion are perfectly entitled to call in one of the hospital surgeons to attend on them, provided they pay him the fees which he is legitimately entitled to. The private practitioners are quite prepared to compete with the members of the hospital staff under fair conditions, and under the accepted rules of medical ethics. But they cannot compete, and we don't think it fair that they should be called upon to compete with a staff of doctors with all the resources of the Government at their back. It has also been urged that, as the Indian hospitals are maintained out of the revenues of State, every tax-payer has a right to the use of such hospitals. We beg to point out that the argument is utterly fallacious. The State maintains hospitals for the benefit of those who cannot afford to pay for medical relief. And the ordinary tax-payer in India has as much right to the use of State hospitals as a rate-payer in England who pays his poor rates has to the use of the workhouse infirmary. The other day we requested the Senior Medical officer of the General Hospital to give us the number of patients treated in the paying wards of the General Hospital during the last official year whose monthly income was above Rs. 500. And the reply we received was—thirty-four Europeans, and no Indians. In the case of non-official

Indians the difficulty of ascertaining their real incomes is very great. But in the case of Europeans, where it is comparatively easy to ascertain the incomes, there were as many as thirty-four in a year whose incomes were over Rs. 500 a month who went in as in-patients in the General Hospital. At the time we asked for these statistics we were not aware of the existence of G.O., No. 575, Public, dated 6th June, 1901, which sanctioned the recommendation of the Principal Medical Officer, General Hospital, Madras, that the rates of hospital stoppages for all classes of patients in the general as well as special wards may be calculated *on the amount drawn by them as pay, income or salary while actually in hospital.*

According to that rule all the rich vakils in this Presidency will, for the purposes of the pay wards of the General Hospital, be classed as men without any income, for during the time that they are *actually in the hospital* they have no income. In that case it is not surprising that the hospital returns show that no Indian with an income of over Rs. 500 a month was admitted into the General Hospital during the last official year.

While in England even the working classes are becoming alive to the necessity of procuring medical attendance for themselves and their families, by joining Friendly Societies or by means of medical insurance, to emancipate themselves from a position of dependence on society to one of economic independence, it is somewhat disappointing to find in this country men with incomes of £500 a year and upwards still clinging to the State for medical relief during the time of sickness. We wish to draw public attention to this curious economic phenomenon and to the fact that the granting of public medical relief to the middle classes in this country is to condemn them to a prolonged sentence of economic dependence.

In Madras we have an efficient body of private medical practitioners—who include a number of Government Medical men who are entitled to take private practice. And consequently the time has come for the Government to withdraw from the field of giving medical relief to all except to those who have not the means of securing it for themselves. The Hospital out-patients' department ought to be open only to the very poor, and ought to be mainly a consultative institution, and its chief function towards those who have not been in-patients should be to assist their ordinary medical advisers in any difficulty or emergency. And as to the wards and pay wards of the State hospitals, they ought only to be open to those who are unable to pay for medical attendance and Nursing Home comforts similar to what is available in the State

hospitals. As to the means of ascertaining the incomes of patients who seek admission into the pay wards, the Government is placed in a far more satisfactory position to undertake such investigation than are the Hospital authorities in England. With the Revenue and Income-tax departments under the same Government as the one which controls the hospitals, there is no necessity for creating any extraneous agency.

PREPARATIONS, INVENTIONS, ETC.

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BOOK REVIEW.

Merck's Manual of the Materia Medica (Fourth Edition):—A ready reference pocket book for the Physician and Surgeon. Containing a comprehensive list of Chemicals and Drugs—not confined to "Mercks" with their synonyms, solubilities, physiological effects, therapeutic uses, doses, incompatibles, antidotes, etc; a table of Therapeutic indications, with interspersed paragraphs on Bedside Diagnosis, and a collection of prescription formulas, beginning under the indication "Abortion" and ending with "Yellow Fever"; a classification of Medicaments; and Miscellany, comprising poisoning and its treatment; and an extensive Dose Table; a chapter on Urine analysis, and various tables, etc. (Merck & Co., 45 Park Place, New York. 1911. 493 pages.) While intended for distribution in the United States, a limited number of copies have been set aside to supply requests from

members of the medical and pharmaceutical professions in other English speaking countries. Mailed on receipt of application, accompanied by postal money order for rs. 6d. or 35 cents.)

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The Polyclinic. The Bristol Medico-Chirurgical Journal. The International Journal of Surgery. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The good health. The Indian Medical Gazette. The Practical Medicine. The Sanitary Record and Journal of Sanitary and Municipal Engineering. The Northumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary Journal. The Medical Review of Reviews. The Post Graduate. The Therapist. The Canadian Practitioner and Review. The Australasian Medical Gazette. The Caledonian Medical Journal. The Canadian Medical Journal. The Monthly Cyclopædia of Practical Medicine. The Ophthalmoscope. The Dental Era. The Interstate Medical Journal. The Medical Notes and Queries. The Calcutta Medical Journal. Folia Therapeutica. 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. Bulletin Journal of the New Animal Therapy. The Journal of Practical Dietetics and Bacterio Therapeutics. Monde Medical International Review of Medicine and Therapeutics.

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Original Articles.

• COLOUR-BLINDNESS—Part II.

BY

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(CONTINUED FROM PAGE 320, VOL. VIII, No. 6.)



COLOUR-BLINDNESS only gives rise to trouble when the individual is called upon to undertake the responsibility of certain vocations or callings in life, as for instance that of engine driver, sailor, etc. It is in a less degree important for artists, house painters and decorators that they should have what is termed a "good-eye for colour" although some artists may do well with clever pictures in spite of their ocular defect and may very cleverly avoid any glaring mistakes. The chief importance is with regard to railway men and sailors who are frequently placed in very responsible positions where the safety and indeed lives of numbers of people depend upon their exercising a prompt and proper judgment. A colour-blind draper or other tradesman may sometimes be inconvenienced by his defect in the selection of coloured ribbons or other goods, but this is a very trivial matter indeed, comparatively, especially as they can generally get the help of an assistant or even solicit the assistance of the customer him or herself without fear of losing the custom; indeed, to a tactful tradesman his ocular defect might even become an advantage as a flattering appeal to the superior judgment of his customer. Fucks in his "Text Book of Ophthalmology" relates the case of a tailor who disclosed the fact of his colour-blindness by wishing to sew a piece of red cloth on to a black coat.

• Specially contributed to *The Antiseptic*.

As a partially colour-blind individual is able to distinguish, for example, red from green, not by the difference in colour but by the difference in brilliancy, he may grow up to adult life totally ignorant of the fact that he is colour-blind, not knowing that the colour he really lacks is any different to others than it is to him. He may, indeed, be quite sceptical and offended at the imputation of colour-blindness. Because these persons are so sensitive to differences of brilliancy, even their associates may not be aware of the fact that they are colour-blind; their being unable to distinguish red fruit or flowers from the leaves of a tree, perhaps, may bring about the discovery of their colour-blindness. Fucks mentions the case of a physician who once came to him charged with the task of testing the employees of a railroad for colour-blindness. "He wished to inform himself," says Professor Fucks, "under my tuition in regard to the methods of investigating the colour sense. When I came to show him the different tests, it soon turned out that he himself was red-blind. Up to that time he had known nothing of this fact and indeed was quite offended at the imputation of being colour-blind." Strange ideas exist amongst uneducated and unscientific persons with regard to colour and also with regard to colour-blindness. Many are under the impression that every shade of colour is a fresh colour and they attribute colour-blindness to some particular colour of the eye. It is, of course, not connected with either the colour of the eye or of the humours within the eye ball. The colour of the eye depends on the more or less pigment of the iris. The back of this little screen is covered with black pigment preventing light passing through it so that its colour can have no effect. The ocular humors of a colour-blind person have been found exactly the same as in the normal-eyed.

Acquired colour-blindness is nearly always associated with some considerable impairment of the visual acuity and the majority of cases are due to commencing atrophy of the optic nerve. It may also be due to some affection of the retina or any part of the optic nerve tracts in the brain even their central terminations. Spinal disease, especially locomotor ataxy (tabes dorsalis) gives rise to colour-blindness, but it is, I believe, always by causing optic atrophy, the colour-blindness being an early symptom of simple or primary optic nerve atrophy in this disease. Cases of retro-bulbar neuritis commence with what used to be termed "toxic amblyopia," the poison either being, as a rule, tobacco (nicotine) or alcohol, or both. These always commence by defective visual acuity along with loss of colour vision, generally a central scotoma for red and green. Green appears to these patients as a dirty white and red as a

dirty brown colour. This condition is first detected by a careful examination with the perimeter. It shows the importance of an examination for colour-blindness as a means of diagnosis in the early cases of diseases in which it occurs. It is important to bear in mind that habitual smokers and drinkers among railroad employees, etc., may become colour-blind when their vision is still good enough for them to discern the signals and perform their other ordinary duties. The warnings of ophthalmic surgeons are too little heeded in this extremely important matter.

Besides certain diseases colour-blindness is sometimes caused by traumatism. The jar and shock to the nervous system, especially spinal cord and brain, in railway accidents being especially apt to bring about the condition. There are numerous well authenticated cases on record where normal colour perception was known to exist before the accident. Professor Wilson reports the case of a physician who was thrown from a horse and suffered great cerebral disturbance. "On recovery sufficiently to notice distinctly objects around him, he found his perception of colour weak and perverted and it has since continued so. Flowers have lost to him more than half their beauty and he still recollects the shock which he experienced on first entering his garden after his recovery and finding that a favorite damask rose had become in all its parts, petals, leaves and stem of one uniform dull colour, and that variegated flowers such as carnations had lost their characteristic tints". (This case is cited by Dr Jeffries in his work on Colour-Blindness.)*

Another case reported is that of a sea captain and as it contains a word of warning and is besides very interesting, I will give it at length: "The sufferer, a sea-captain, ten or twelve years ago, was accustomed, when time lay heavily on his hands, to occupy it by working at embroidery. Being engaged one afternoon upon a piece of work of this description and anxious to finish a flower, a red one, he believes, he prolonged his labours until twilight fell, and he found it difficult to select the suitable colours. To obtain more light he went into the companion, or entrance to the cabin, and there continued his needle work. While thus taxing his eyes his power of detecting the colour suddenly vanished. He went upon deck, hoping an increase of light would restore his vision. In vain. From that time to the present he had remained colour-blind. Mr. White Cooper, who examined him found that Berlin Worsteds with which he had been accustomed to work, he at once, pronounced to be blue. He had a keen appreciation

* Colour-Blindness: Its Dangers and Detection, Joy Jeffries A.M., M.D.—London: Trubner & Co.

for this colour, and never made a mistake regarding it. Two blends of Worsted, one a light green and the other a vivid scarlet, were next placed before him. He pronounced them to be both the same colour. A difference of shade was perceptible, but both to him were drab. A green glass and a red glass were placed side by side between him and the window. He could discern no difference between the colours. A very dark green he pronounced to be black. The purple covering of the chairs was also black. A deep red rose on the wall paper of the room was to him a mere blotch of black, fruits partly of a bright red and partly of a deep green were pronounced to be of same uniform colour. A cedar pencil and a stick of sealing wax placed side by side were nearly alike; the former was rather brown, the latter drab. The electric light through a green glass allowed to fall on a screen gave him no colour except only that portion of the screen was a little less intensely illuminated. Captain C. was assured that previous to the circumstances related he was a good judge of colours so that pronouncing on any colour he has an advantage from memory not usually possessed by the colour-blind. Indeed he had an opportunity for reviving his impression of red. A glass of this colour was placed before his eye while he stood close to the electric lamp; he at once exclaimed "that is red." He appeared greatly delighted to renew his acquaintance with this colour and he declared he had not seen it for several years. The glass was then held near the light while he went to a distance, but in this case no colour was manifest, neither was any colour seen when a gas lamp was regarded through the same glass. The intense action due to proximity to the electric light appeared necessary to produce the effect. Captain C's interest in this experiment was increased by the fact that the Portland Light which he has occasion to observe has been recently changed from green to red, but he has not been able to recognize this change. The fare in the forecabin of a vessel of his own which he now commands happens to be six-pence and he is often reminded by passengers that he has not returned their change. The reason is that he confounds the six pence with a half sovereign, both being to him of the same colour. A short time ago he gave a sovereign to a waterman believing it to be a shilling."

For the scientific examination of the colour-blind the spectroscope is indispensable. By its aid we are able to determine not only what colours are really discerned by an individual, but whether a person suspected of being colour-blind sees the spectrum shortened at one or other end. When there is shortening of the spectrum the centres of the colours are moved towards the unshortened side. Edridge-Green uses

a spectrometer by which he marks out isolated patches of colour for his patients to name and compare with other colours. All below the tetrachromic, *i. e.*, those who can see four distinct colours, he classes as dangerously colour-blind, and these should be rejected as candidates for nautical and railroad service. Edridge-Green describes his spectrometer as follows:—"In the focus of the instrument are two moveable shutters, either of which is capable of moving across the spectrum. By means of the two shutters any given portion of the spectrum can be isolated. Each shutter is controlled by a drum graduated in wave lengths so that the position of the edges of the shutters can be known. The accuracy of the graduation is to 5 Angstrom units. We can ascertain with this instrument the exact size of portions of the spectrum which appear monochromatic and their varying size with different persons. We can also determine the limits of visibility on both sides of the spectrum, the exact size and position of the neutral band in different dichromics, and the position of the most luminous portion of the spectrum. This instrument gives us a key to the colour perception of any person."

Unfortunately this expensive and elaborate instrument is quite out of the question for the vast majority of those who are called upon to test the colour vision of would-be employees upon railroads and in ships in different ports and parts of the world, and the ordinary surgeon has to content himself with one or more of the many other tests suggested. One, supposed to be the best, is that made by Holmgren's wools, of which Jefferson's is a modification. It has a great disadvantage in only being a near test and not a distance one. Those who can discern colours close to cannot discern them at a distance and the wools after a time get soiled; besides, as Edridge-Green says, it has to be proved that a man who puts a confusion colour with a green wool cannot distinguish between a red and a green light. The test may be described as follows:—"The observer is asked to select from a heap of wools all those that correspond to one that is given him as a test object. There are three tests to be made. The first is supposed to detect all those who have any defect of colour vision, and the others show the nature of the defect. In the first test, a skein of light pure green, rather freely mixed with white, is used and the patient required to select all the corresponding shades of green. If he selects any of the confusion colours, *viz.*; grays, drabs, yellows, rose and salmon, or hesitates and shows doubt as to whether he should choose one, then he should be subjected to the second test. For the second test a bright shade of purple is taken as a test; the confusion colours are blues, violets, grays and greens.

If the patient be red-blind he will choose the blue and violet, because purple being composed of red and violet or blue, is to the red-blind identical with the two latter colours; while if he be green-blind, he will choose a gray and bright green. For the third test a bright red skein is selected, the confusion colours for this being the dark and light shades of green, and brown or olive. The red blind chooses a dark brown and a green; while the green-blind selects a green and a lighter brown." The advantages of this test are two, one is that the examinee is asked to match the colours, not to name them, and the other is that he is detected if he is really colour-blind and has always judged of colour by the difference of brilliancy. The disadvantages are, as Edridge-Green points out, the difficulty of obtaining correctly coloured wools and duplicates of the wools; the colours are liable to fade; and this fading will take place more rapidly in some colours than in others. Thus the results of examinations will not be uniform and comparable. Also there is the disadvantage, already pointed out, of its being only a near test and not a distance one. Who, but the most ignorant of opticians, would dream of using merely the reading type when called upon to test the visual acuity? A distance colour vision test is as necessary as a distance form and light sense test. Again, is it really an advantage for the examinee not to name the colours? When the enquiry is made for some practical purpose, usually the examination for sailors and engine drivers, the three important colours to be considered are red, green and white seen at a distance under varying conditions of atmosphere. Take for instance the red of a red light; our object is to find out exactly the man's mental attitude towards red. An engine driver names, so to speak, to his own mind the red colour of a light when he sees it two miles away, his prompt action depends upon his immediately deciding that what he sees is red, or what his mind interprets as red; he has been told that red means danger and his promptly bringing the train to a stand-still saves a collision. He thinks "this is a red light therefore I must stop my train". It is practically as if he actually said the word "red" aloud; therefore colour-names must be introduced in this important kind of examination; it is impossible to exclude them. To merely match colours, even differentiating red from green is not enough; we must find out exactly what red is to the man's mind and what green is, and become sure that the difference is the difference of two colours and not really to his mind, unconsciously, merely the difference of brilliancy.

The best practical test is that of a lantern across the room with slides; this has standard red and standard green glass, recommended by Edridge-Green. He says, "there are few colour-blind people who can-

not distinguish between a red and a blue green light at a short distance. A simile will show how they are able to do this:—If a normal sighted person were to take two coloured glasses, green and blue green, and place them in a lantern at a short distance, he would be able to distinguish them with ease. He would see as much between them as the colour-blind (dichromic) do between the standard red and green. But as the distance becomes greater he would find more difficulty in distinguishing between the green and blue-green, and it would be very unsafe to trust a ship or a train to his powers, especially when one light only was shown. The dichromic colour-blind find the same difficulty with ordinary red and green. The intensity and character of the light should therefore be changed without the knowledge of the candidate. This may be done effectually with certain kinds of neutral glass. The glasses I use, like a mist or fog, are most transparent to the red rays at the extreme left of the spectrum, and when several glasses are used together the light allowed to pass through them has a distinctly reddish hue. The normal-sighted easily recognize coloured lights that have had their intensity diminished by these neutral glasses, but the colour blind find great difficulty in distinguishing the colours in these circumstances. The test consists in naming coloured lights, which are shown unmodified and modified, as they would be under ordinary atmospheric conditions. The neutral glasses represent fog, the ground glass mist, and the ribbed glass rain."

How much better is this test than the wool test, even though this latter may be Jefferson's modification of matching the wools by turning a disc in a black frame. The one test does very well for merely finding out whether your patient can match colours, the other is a practical test for finding out whether your examinee is capable of acting promptly and safely under circumstances of supreme responsibility and danger. The Board of Trade, I believe, still adheres to the wool test as their official test. We most sincerely hope they will speedily adopt Edridge-Green's more practical and far safer one for the purpose they should have in view.

•SYPHILIS.

BY

J. BERNARD DAWSON, M.B., B.S., F.R.C.S.

(Continued from page 324, Vol. VIII, No. 6.)

There are a very interesting group of the manifestations of syphilis which must now be reviewed. These are the intermediary phenomena.

•Specially contributed to *The Antiseptic*.

They assume a form which has some of the characteristics of secondaries and some of the tertiaries. These are sometimes known as the late secondaries. They do not always appear, especially if early treatment has been active and the patient is in a good constitutional condition. The period of the late secondaries is ill-defined and irregular, sometimes merging with the true secondaries or sometimes appearing after a period of apparent good health.

Some of the secondary phenomena proper may persist during the period, or the patient may be subject to "residual secondary symptoms" in the shape of various recurrent skin troubles or a hydrocele due to an underlying secondary epididymitis.

THE INTERMEDIATE OR LATE SECONDARY MANIFESTATIONS OF SYPHILIS.

1. *Cutaneous.*—

(a) *Syphilis Psoriasis*, generally affecting the palms and soles. This is distinct from the squamous syphilide of the secondary period which is usually symmetrical and quickly influenced by mercury. This specific psoriasis is usually unilateral and somewhat intractable to specific treatment.

(b) *Rupia* commences as an infiltration of a localised skin area, rapidly passing on to ulceration. The discharge dries to form scabs which become superimposed one upon the other until there is a conical mass not unlike a limpet shell.

(c) *Ecthyma*. The onset and course is similar to that of rupia save for the fact that scabs do not form, but the lesion remains as a hollow punched-out ulcer surrounded by an inflamed area of skin.

2. *Nervous Symptoms.*—

(a) *Monoplegia* affecting any limb may arise. This is due to anæmia of a portion of the motor area of the cerebral cortex due to occlusion of the blood vessels by syphilitic endarteritis.

Similar anæmic patches may occur in any part of the central nervous system, but unless the affected part be one concerned in important functions the lesion may pass unnoticed.

(b) *Lesions of the deeper layers of the eye* may appear, and a syphilitic choroido-retinitis is not uncommon.

THE TERTIARY MANIFESTATIONS OF SYPHILIS.

The tertiary phenomena are due to the arising of granulomata commonly known as gummata. The pathology of these has already been discussed.

This infiltration may affect the pre-existing fibrous tissue of the body leading to an extensive proliferation and condensation of the same.

Any tissue in any part of the body may be the site of a gummatous deposit. This naturally leads to an enormous variety of clinical phenomena and symptoms.

The importance of these deposits depends mainly upon 3 factors:—

1. The damage to tissue and impairment of function which may be caused by their actual presence.

2. Their tendency to fibrose, contract and thus produce deformity and damage to the tissues in which they are located.

3. Their tendency to undergo degenerative changes, to necrose, undergoing a form of mucoid change to form a gummy fluctuating mass.

It is impossible to enter in detail into the various clinical conditions produced by the appearance of gummata.

They vary from syphilitic ulceration of the leg to specific cirrhosis of the liver. There are, however, certain of the commoner phenomena which should be especially noticed and also some conditions peculiar to the tertiary stage of congenital syphilis.

TERTIARY MANIFESTATIONS PECULIAR TO CONGENITAL SYPHILIS.

1. *The Teeth.*—

These are often very characteristic. The first dentition usually appears early, but are of bad colour and quality, rapidly crumbling away. The permanent set may be sound, but are usually malformed. They are broader at the root than at the crown, stunted in growth and usually separated by large interspaces. In the centre of the cutting edge there is a distinct notch. They decay early, probably owing to defective enamel formation.

They are commonly known as "Hutchinson's Teeth" and those affected are the central upper incisors, the central lower incisors and the lateral incisors of the upper jaw.

2. *The Bones.*—

(a) "Parrot's Nodes" is the name given to the mass formed by a new formation of bone beneath the periosteum. This often occurs at the margin of the anterior fontanelle and produces what is known as the "hot cross bun" skull.

Syphilitic Epiphysitis.

(b) This is an enlargement of the ends of bones due to a change in the calcified cartilage nearest the diaphysis, which becomes opaque and

friable with an irregular arrangement of its component parts. This may progress until granulation tissue is produced, producing a separation of the epiphysis. Suppuration commonly follows, leading to the formation of an acute arthritis. In this condition the limb hangs useless in a condition known as syphilitic pseudo-paralysis.

(c) Symmetrical overgrowth of the tibiae may produce an antero-posterior curvature of the legs together with a permanent increase in length of the limb.

(d) "Craniotabes" is the name given to a localised absorption of the bony tissue of the skull. The bone most often affected is the parietal. CARPENTER states that this bone is alone affected in 60 % of cases and together with other bones in 95 % of cases.

3. The Eyes.—

A diffuse interstitial inflammation of the cornea may occur about the age of puberty or sometimes earlier.

It is usually limited at first to one eye, but sooner or later the second is affected.

There is at first some hyperæmia of the ciliary region associated with a hazy ground-glass like appearance of the cornea. There may be a new formation of minute blood-vessels producing red spots known as "salmon patches."

Ulceration does not occur, but in neglected and untreated cases the cornea may bulge forwards to form an anterior staphyloma.

Rarely the iris and ciliary body may become implicated.

Among the tertiary phenomena of acquired syphilis the two manifestations which attract notice and are sought for to confirm a diagnosis of the disease are gummata of the legs and chronic superficial inflammation of the tongue.

Gummata of the Legs.—

These may be cutaneous, affecting the skin. They may occur anywhere on the body, but are most common on the outer aspect of the legs, about or below the knee.

They arise in small reddish nodules of firm consistency. They usually ulcerate to form sores with a rounded or serpiginous outline. They may be very destructive but are readily cured by appropriate treatment and leave white depressed scars surrounded by dusky pigmented skin. It is these scars which are so characteristic and which form such good evidence of the occurrence of a syphilitic infection,

Subcutaneous gummata arise in a similar manner in the subcutaneous tissue, but they produce much deeper ulcers and are more difficult to heal.

Chronic Superficial Glossitis.—

Most commonly due to syphilis, but may possibly be originated or aggravated by dirty teeth, smoking, spirit drinking, and chronic dyspepsia.

The disease has been artificially divided for purposes of description into 5 stages, but these stages are by no means distinct and merge one with the other, or may be present on different parts of the same tongue:—

1. Enlargement and swelling of papillæ, giving rise to the appearance of red hyperæmic patches.

2. Overgrowth of epithelium which become sodden and opaque, giving rise to white patches known as "leukoplakia."

3. This epithelium is shed, leaving red smooth patches without epithelium. This is known as the "red glazed tongue," so characteristic of tertiary syphilis.

4. The appearance of cracks and fissures due in part to the cicatrization of fissures and in part to contractions of the sclerosed tissue deep in the substance of the tongue. This is sometimes known as the pre-cancerous stage, and indeed it is very likely to proceed to the development of—

5. The epithelioma which BARKER states may occur in 43 per cent of cases.

*MALARIAL PARASITES AND THEIR RESPECTIVE SIGNIFICANCE.

BY

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This subject must be now quite old. But, I am afraid, it is still very young. The 6th November 1880, on which date Laveran, a French Physician, saw for the first time the flagella of hæmatozoon, and his first publication which dates from 1881, is several years prior to the works of Marchiafava and Celli, who in 1889 simply verified the facts announced by Laveran between 1880 and 1882. About 20 years in the study and development of this important discovery is not much, and yet I must say that the Medical Profession of the world has been, since the

* Specially contributed to *The Antiseptic*.

discovery, steadily enriching the literature of malaria. Why, the very method of using quinine in malaria is undergoing many and many a change, and I am afraid it will be long before we hit upon a more or less universal method of administering quinine, even upon the kind of quinine to be used generally. The market has many kinds, cheap and costly, which also is a factor to be counted, especially when we realize the fact that the drug has to be used for periods varying from two months to two or three years, and, in malarious tracts, the drug has to be used daily in 5-grain doses as a prophylactic. The questions at issue are large and highly important, and it behoves every medical man to collect facts and figures in support of a more or less universal plan of treatment. We have luckily, thanks to the efforts of Laveran, Sir Patrick Manson, Ronald Ross, Marchiafava, Celli and others, come so far, and it is incumbent on every medical man to mark out the further lines on which we should proceed, in order to make this success succeed ultimately in stamping out the disease or at least so arrange our opinions as to make the disease less disastrous to humanity, or rather, the least disastrous to humanity. I must say that in the line of treatment with quinine we are still very divided. And I hope medical men would make combined efforts to, once for all, solve the difficulties. This is a national question, at least, in India.

But now I am here to demonstrate the nature of the microscopic appearances of the parasite. To come to the point, hitherto a benign tertian parasite and a crescent found were demonstrated to be the result of a double infection and I, very often, wondered the existence of such combinations. Over and over, have I found such microscopic evidences and I, always, felt a little curious about the so-called double infections *i. e.*, infection by two different kinds of parasites. Now I have been able to gather definitely some information regarding these so called double infections. On page 1747 (Vol. II) of the Text-book of Medicine by the renowned French author F. Dieulafoy, translated into English by Drs. V. E. Collins and I. A. Liebmann (1910, Bailliere, Tindall & Cox, London), the following passages occur which serve to clear all the mystery in connection with the microscopic evidences till now held by us as scientific:—

*"Evolution of the parasite:—*The first act of this polymorphous parasiticism is its appearance in the form of a transparent vacuole in the red corpuscle. The vacuole becomes a spherical body and is filled with pigment granules at the expense of red corpuscles. After this the spherical bodies push out the flagella. The hæmatazon some-

times assumes the form of a crescent incorporated in a red corpuscle which has been digested, but at other times it breaks up and forms a rosette body. Segments or spores numbering ten or twenty become free and pass into the plasma, where the cycle begins a fresh.

*"Frequency of the types.—*In the cases observed by Laveran the types of the hæmatazon, alone or combined, were divided as follows:—

"Spherical body	..	..	..	389 times.
"Crescent	..	..	..	107 times.
"Flagella	..	..	..	92 times.

"It has recently been stated that the type of the parasite varies with that of the fever. According to Golgi, there is a special parasite for tertian fever, quartan fever, etc. *This is an error. The flagella and the spherical bodies are more frequent in acute malaria; the crescent bodies are more often found in chronic cases, but the parasite is always the same.*"

The italics are mine. I need not further comment on these facts beyond mentioning the fact that the association in our minds of the crescent with the malignant tertian infection is not quite correct, and the sooner we break up our associating the sexual forms of the parasite with the particular kind of fever, the better would be our scientific knowledge of malaria.

It wants a close touch with the progressive study of malaria, to be able to follow it up properly and therefore, I may, with due respect, advise my professional brethren not to be under the impression that we have now understood everything about malaria or that there remains nothing more to be studied regarding the subject of malaria.

Our Contemporaries. MEDICINE.

Some Common Affections of The Stomach.

By

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I suppose no one will deny that affections of the stomach are infrequent among navvies and ploughmen, and yet they eat the coarsest food and drink strong decoctions of tea. For the most part, their food is hard and coarse, which compels efficient mastication and insalivation in the mouth, and thus the first process in digestion being started properly there is little or no trouble in the subsequent stages. The open-air life and hard manual labour are prime factors in bringing about this

happy state of affairs. There must be very few doctors who have not experienced great difficulty in extracting teeth from the same class of people.

If we take the case of seamstresses, who lead sedentary lives, frequently in a polluted atmosphere, their meals washed down with tea, the case is often very different. The stomach, which in health does its work silently and peacefully, now becomes the centre of strange emotions, which no pen can adequately describe. There is the rumbling of gases, the feeling of weight and distension after meals, uneasy, qualmish sensations; or it may be the lance-like pain that shoots through the stomach when ulcerated, or the weary, gnawing pain of cancer. The round, chubby look of health is replaced by an expression of silent suffering, or the jaded look of feeble health.

We may therefore formulate two golden rules for good digestion—

1. That the food should be thoroughly masticated in the mouth, and it should reach the mouth in such a state as to naturally tend to ensure mastication.

2. That vigorous exercise in the fresh air is an essential adjunct.

Sir James Paget summed up the desirable qualities in food for a dyspeptic in stating that it should "neither be tough, hard, or doughy." The one essential point about it is that it should be in a state for easy disintegration in the mouth. The object of cooking is to render food not only appetising, but readily broken down in the mouth; and the cooking is bad which does not accomplish this object. We must therefore reject from our tables sodden potatoes—potatoes that ought to be floury, granular, and melt away in the mouth. We must banish beef that is boiled tough or fried into a leathery consistence. Vegetables which have not been boiled until soft and tender must also be avoided. The mistake usually made in cooking is that the flesh foods are too fiercely cooked and overdone, while the vegetables are not done enough. Then it is a mistake to cook foods like rice by boiling in milk instead of in water. Grilling is the ideal method of cooking flesh foods. They are then exposed in the cooking to the oxygen in the air, which probably has the effect of rendering the products of decomposition in the meat harmless. Stews are notorious for disagreeing with the stomachs of many people.

It is found in practice that when the stomach is disordered proteid food is the most suitable. It would seem that when digestion fails, the failure is chiefly with the carbohydrates or hydrocarbons. In addition

to this, fermentation of the carbohydrates is accompanied with the formation of acid products, which have a burning effect on the throat, as in heartburn.

I connect with this acid dyspepsia many cases of muscular rheumatism, with cramps in the legs at night. In this connection, beer, and most wines that are acid, are specially noxious. Many rheumatic people cannot drink beer or wine without having pains in their joints.

Some cases of chronic bronchitis appear to me to be kept up by a "sour" stomach. Chronic bronchitis, sour stomach, and cramps in the legs at night is not an uncommon triune of symptoms. They are all improved by alkaline medicines and a light proteid diet.

In cases of ulcer of the stomach, particularly in young females, which run a chronic course, there is often a languid circulation, cold hands and feet, with frequent tendency to chilblains. In addition to the usual treatment of ulcer, a course of digitalis and iron is beneficial in preventing relapses.

It is now a recognised fact that in gastric ulcer there is hyperchlorhydria—an excessive secretion of hydrochloric acid in the stomach—while the converse holds good in cases of cancer of the stomach. In typical cases of gastric ulcer, the pain soon follows the ingestion of food, is frequently associated with vomiting, and often a tender spot can be detected in the epigastrium.

In duodenal ulcer the pains come on some time after meals—it may be about two hours after—is very intense, and the tender spot is frequently below and to the right side of the ensiform cartilage. Melæna may be present. I think in pure cases of hyperchlorhydria the relief experienced by the ingestion of food, and particularly the relief got by a dose of chalk, is somewhat characteristic. The above diseases are common in people under 40 years of age, while painful gastric symptoms in people over that age should awaken thoughts of cancer and of a surgeon.

Not a few cases of cancer of the stomach that have come under my notice have had, to my own knowledge, a history of gastric ulcer years previously, so that one way of preventing cancer of the stomach is efficient treatment of gastric ulcer.

Chronic gastric catarrh is another very frequent affection of the stomach. I cannot recall a case that finished in cancer. In some way it is possible that the hypersecretion of mucons that is present in these cases may be inhibitory to the cancer invasion. These cases are associ-

ated with uncomfortable feelings of distension and weight after meals, and general malaise, with constipated bowels.

Then there is the atonic state of the stomach in neurasthenic individuals, which is characterised rather by its vagaries than by any well-defined symptoms, and the treatment is hygienic and moral rather than local.

Miss M., æt. 19, suffered for two years from pain after meals. She was anæmic, and in indifferent health. She also had muco-purulent spit, with sharp pains about the chest, that made her mother anxious, and suggested a tubercular affection of the pleuræ, if not of the lungs.

For three months—until her stomach was quite well—she took the following dietary:—

1. *Breakfast*.—Half a tumblerful of milk and hot water instead of tea; Vienna bread (ordinary bread did not agree with her); poached egg or steamed fresh white fish.
2. *Dinner*.—Beef-tea free from fat, or hough or rabbit tea; toast, fish, or chicken.
3. *Tea*.—Same as breakfast.
4. *Supper*.—Benger's food cooked with water.

She was put on a bismuth mixture containing a little morphia, and her bowels were regulated by a douche containing soap and a little turpentine. In a month she was improved, although she was cautioned not to take any vegetables or beef for other two months. She was then put on iron tonics and on a generous diet—revalenta arabica, plenty of milk, eggs, fish, grilled meats, &c. She weighed 7 st. 2 lb. when she came under treatment; she now weighs 10 st. 11 lb., and looks the picture of health. She has now no cough or spit.

It may be mentioned in this case that she had a large mass of glands, the size of an orange, in her left armpit, presumably of a tubercular nature, which is now reduced to the size of a walnut. The treatment of this mass was as follows:—Every night a piece of boracic lint, wrung out of hot water, was applied over the mass; above the lint was placed a hot linseed poultice, the whole covered by a piece of jaconet. This is a slow but useful method of treating such masses, and takes months to bring about the improvement indicated above.

Wm. C., æt. 35, had for six years a history of severe pain coming on two hours after a meal, relieved for a time by the taking of a meal. The pain was at times excruciating, and made him dread eating food at all. He is a commercial traveller, and a teetotaller. His circulation

was languid, hands cold, face congested looking, especially the nose. The pain shot through to the back, and there was tenderness on pressure below the breast bone.

He was put on powders containing sod. bicarb. morphia and bismuth, to be taken after meals. His food was restricted to clear soups, fish, boiled lean mutton, rice boiled in water, and China tea with toast.

He made substantial improvement under the above treatment, and quickly progressed towards recovery, when chalk was added to the treatment. He got the following mixture, which, he said, acted like magic:—

R.—Liq. bismuth.,	...	...	...	3ii
Sod. bicarb.,	..	...	..	3ii
Tr. rhei. co.,	...	..	...	3iii
Spt. chloroform.,	...	...	...	3ii
Mistur. cretæ,	...	...	ad.	3viii

SIG.—3ss after meals.

He was afterwards put on tonics, and for the last six months can eat anything in the shape of food with comfort and pleasure.

Enough has been said, I hope, to show the extreme value of chalk in cases associated with hyperchlorhydria.

In cases of chronic gastric catarrh associated with the hypersecretion of mucus the most essential point in treatment is lavage of the stomach. After the diet has been revised, lavage must be begun.—*The Caledonian Medical Journal*.

Absent-Minded Doctors.

In a play entitled "Chou Blanc," recently played in Paris, one of the characters was a hooligan, who, in order to get out of a tight place, passed himself off as a doctor, and went to sleep on the breast of the patient whom he was pretending to auscultate. However improbable this may seem, the thing has actually occurred. About a year before his death Professor Potain was called to a man suffering from severe bronchitis. The physician asked to be left alone with his patient, and proceeded to auscultate his chest, asking him to count aloud. Waiting behind the door for the deliverance of the oracle, the anxious wife was surprised at the length of the consultation, and at last went in to see what was the matter. She found the doctor asleep on the breast of her husband, who was steadily counting, and was well on the way to 500. This reminds one of the doctor who had been dining and was called from a game of cribbage. He tried to count the patient's pulse, and got on well enough till he reached the critical number

15, when he proceeded: "15, 2; 15, 4; one for his nob," and so on. Another instance of a doctor going to sleep in examining a case, though still more unlikely than the story related of Potain, was told to us by one of the parties concerned. As all of them have long since passed away, there is no harm in repeating it. A well-known American physician had been recommended to a famous invalid lady with a warning as to his temper when suddenly aroused—as the French say, *il avait le reveil brutal*. He went to her for the first time when he was tired out. Having to make a vaginal examination, he found the bed too tempting as a resting place for his head and went to sleep in that somewhat abnormal position. The unfortunate lady, who would never allow even her maid to be present on such occasions, remembering the warning she had received, was afraid to move or call for help. How long the doctor's slumbers lasted we do not remember, but we have no doubt that the lady accurately described the situation when she said it was "very awkward." A story is told of a celebrated physician called in to examine Joseph II of Austria. The doctor was either absent-minded or overawed by being brought into such close contact with an Emperor, even in bed. Putting his hand under the bed-clothes to feel the patient's pulse, he laid hold, not of the wrist, but of another part of the Imperial person which happened to offer itself to his touch. His Majesty called his attention to the fact in the gracious words: *Erras amice. Hoc est nostrum Imperiale membrum!* What the physician's feelings were is not recorded. One must, however, admire the tact with which the Emperor dealt with a delicate situation.—*The Canadian Practitioner and Review*.

Pyo-pneumothorax caused by Artificial Teeth.

K. Nicol:—A soldier, aged 21, who suffered from a slight cold, was seized in the night with an attack of coughing, during which he suddenly felt that a foreign body had entered his larynx, and was obstructing his respiration. After violent coughing, he felt this body pass from the larynx into the œsophagus. Respiration again became easy, but he felt a sense of pressure and pain in the œsophagus on deglutition. He was wearing artificial teeth, although the plate had been broken and part had become detached. This part, which presented a metal hook, had been swallowed. A skiagram showed that it was in the œsophagus, at the level of the clavicles. No immediate attempt was made to remove the obstruction, and he was admitted to hospital, where the œsophagoscope was inserted under cocaine, and the foreign body was removed with difficulty, but without apparent injury to the walls of the œsophagus.

The general condition was good, and the dysphagia practically disappeared. Next day a rigor occurred, and there was pain on the right side of the chest. Over the right lung behind there were dulness on percussion and diminished respiration from the 8th dorsal vertebra downwards. The temperature was 105.4°, the pulse 110, and the respiration 36. The expectoration was serous and viscid, and contained streaks of blood and numerous cocci and rods, but no pneumococci or tubercle bacilli. Three days later there were signs of fluid in the right pleural cavity, and exploratory puncture yielded a serous, slightly clouded fluid, containing putrefactive organisms. Later the signs of a pyo-pneumothorax developed. Resection of part of the seventh rib in the scapular line was performed under local anæsthesia. Much gas and foetid pus under considerable pressure were removed. The patient gradually recovered and was discharged after 3 months' treatment.

The case is of interest as pyo-pneumothorax is usually due to tuberculosis. It is unlikely that the œsophagus was wounded, and that micro-organisms and swallowed air passed from such a wound into the pleural cavity, for there was no interstitial cervical emphysema, nor purulent mediastinitis. Probably while the foreign body was lodged in the upper respiratory passages, septic matter was drawn into the lung, causing septic pneumonia, and then gangrene, which led to perforation of the visceral layer of the pleura.—*The Medical Review*.

Multiple Arthritis after an Injection of Tuberculin.

Diem:—Complications may follow the injection of large doses of tuberculin—hæmoptysis, broncho-pneumonia, pleural effusion, miliary dissemination of tuberculosis, angina pectoris, hæmorrhagic nephritis, and tetany. When tuberculin is used for therapeutic purposes, these may usually be avoided by giving extremely small doses. But if used for diagnostic purposes, before the reaction of the patient has been tested by a small dose, such as $\frac{1}{10}$ mgm., complications are possible. A peculiar complication was observed in the following case.

A woman, aged 32, who had had syphilis, apical catarrh, and phlebitis, was attacked with strangury and pain on micturition early in July. On the 19th a rigor occurred with severe pain, especially in the left lumbar region and radiating to the bladder. She was admitted to hospital.

There were cystitis and secondary bilateral pyelitis. A few days after admission pains and swelling of the left knee, ankle, and sternoclavicular joints appeared. Under salicylates the swelling and pain in

the joints subsided within a few days. The pyelitis also was cured in about 4 weeks, though marked bacteriuria persisted. Later extremely tender patches of erythema with a slight rise of temperature appeared from time to time on the skin of the legs. This erythema was regarded as rheumatic, especially as it was frequently accompanied by pain in the hips and the mitral valve became affected. As the bacteriuria resisted treatment for 3 months and after it was cured there was occasional evening pyrexia, the question arose whether the pyelitis was a simple coli-infection or tuberculous. No tubercle bacilli were found in the urinary sediment. The ophthalmo-reaction with 2 per cent. tuberculin was a violent conjunctivitis, which persisted for some time. Von Pirquet's test produced a papule of the size of a farthing on the right forearm. When this had disappeared 0.5 mgm. of tuberculin (T. R.) was injected in the right forearm. On the following day the temperature rose to 102.2° and the right forearm became œdematous and red. In the right wrist-joint and in every joint of the fingers considerable effusion appeared, the skin over the affected joints becoming livid. There was violent pain in the right arm and, on movement, in the joints. There were some tender, enlarged glands in the right axilla and the skin over the right shoulder, supra clavicular fossa, and the right pectoralis major was hyperalgesic. The temperature rose nightly on the 6 days following the injection. In the lungs, especially over the right lower lobe, were numerous moist rales, which, however, rapidly disappeared. On the seventh day the temperature became definitely normal, and on about the tenth day, under warmth and elevation of the limb, the œdema of the forearm and the swelling of the joints had disappeared.

The tuberculin was sterile and was used in other cases without complications. The syringe had been preserved in alcohol and the skin previously cleaned with alcohol. The needle track showed no signs of suppuration. That the affected joints became a *locus resistentiæ minoris* after the attack of rheumatism is negatived by the fact that they were not involved. The complication was probably due to anaphylaxis. It was remarkable that all the affected joints were distal to the site of the injection and that the elbow, though equidistant, was unaffected.

To avoid such complications the writer advises that von Pirquet's reaction should invariably be tried first. If an unusually large papule develops, caution is required and an initial dose of not more than $\frac{1}{10}$ mgm. of tuberculin should be injected.—*The Medical Review*.

Some Medical Aphorisms and Experiences.

BY

SEYMOUR TAYLOR, M.D., F.R.C.P.

The subject of my lecture to-day is named "Some Medical Aphorisms," and although I may be considered a plagiarist in the selection of the title, I must ask you to acquit me of any charge of attempting to copy the work of a well-known hospital physician, Dr. Gee. Many of his dicta are absolutely correct, though there are some which do not meet with the endorsement of every clinician. And probably the same observation will be made of some of the statements which I am about to submit to you.

An aphorism is described as a maxim, or a general rule. I would prefer to select the latter definition, since in medicine very few axioms obtain. Medicine was never an exact science, and never will be, so long as the varying eddies of life and its environment are manifest. So all that a medical observer can say is that, in his experience, certain signs, symptoms and data are in the main correct; and the more observant he is, and the greater the opportunities of observation which he has enjoyed, the more likely is he to be correct in the deductions which he submits to his audience.

In placing before you the following clinical suggestions or intimations for your acceptance, I think it best and most convenient to arrange them in some order of anatomical sequence, though some of them may overlap.

Let me therefore begin with the

DIGESTIVE TRACT.

i. The site of abdominal pain is by no means always a guide to the seat of lesion. I remember, among many others, a patient in whom the situation of pain, tenderness, together with other symptoms, and the history of illness pointed to volvulus of the descending colon. When the belly was opened by a surgical colleague, he found a diseased and perforated appendix.

ii. In all cases of abdominal trouble in which the diagnosis is obscure, the surgeon's incision, if laparotomy be decided upon, should be such as will command the appendix.

iii. Cancer of the bowel is a chronic disease, but may exist for many weeks before it betrays itself, and then often the first symptoms are those of acute obstruction.

* A lecture given at the West London Post-Graduate College.

iv. In malignant disease of the abdomen, the end often comes with startling suddenness, although the patient may have appeared to have been no worse on the day proceeding his or her death.

v. The examination of a patient who has gall-stones or in whom the presence of gall-stones is suspected, will often provoke an attack of colic a few hours after examination, the calculi being disturbed or dislodged by the process of manipulation.

vi. In biliary colic, olive oil in large doses is only useful when the calculi are numerous and small. It is useful when there is evidence that a large calculus, anything over the size of a horse-bean, is present.

vii. In all cases of gastric disturbance or of colic, no matter whether the pain be referred to stomach, to intestine, to the liver, or to the kidney, never omit to inquire into the presence or absence of the knee jerks.

viii. Copaiba is one of our best remedies in cases of portal dropsy.

RESPIRATORY TRACT.

i. Micrococci will produce entirely different results according to the site of their invasion. For example, the pneumococcus may remain in the buccal cavities for weeks, and probably longer; but when it invades the alveoli of the lungs, or the pleura, pneumonia results in the former case, and suppuration (empyæma) in the latter.

ii. The lung is not the only organ or tissue which is liable to pneumococcal infection, and the lethal effects of the pneumococcus may be equally pronounced when it invades the accessory passages of the air tract (*e. g.* antrum) as when it involves the lung.

iii. Tuberculous phthisis in elderly people between sixty and seventy years old is by no means uncommon, and often two or more members of the same family are affected at about the same age.

iv. In chronic bronchitis death is most frequently due to the supervention of an acute attack.

v. The chronic bronchitic should always be a spare eater, and should abstain from alcohol. The recurrences of acute attacks are considerably lessened thereby, and the general health and comfort of the patient considerably enhanced.

vi. The phenomenon known as Cheyne-Stokes respiration is of the gravest omen. I have not known any patient recover in whom this symptom has been present.

vii. The large mucous rale, when it comes on during an acute affection of the respiratory tract, is one of solemn prognosis. I have only known a few recover in whom it occurred.

viii. In pleural effusion, if aspiration be decided on, it is best to drain the cavity as completely as possible. The advent of persistent short cough is the best guide to the operator that the needle should be withdrawn.

ix. In pneumonia the pulse tension is always low.

x. The death-rate from pneumonia is not so much influenced by the area of pulmonary tissue which is involved as by the virulence of the toxæmia. Some people, with severe double-pneumonia, survive; others with only a small portion of one lung affected, die.

xi. In pneumonia the earlier the crisis occurs the lower the death-rate. It should therefore be our duty to hasten, if possible, the advent of the crisis. Until we have a suitable "vaccine," I find that the old-fashioned treatment of sweating, preferably by large doses of liquor ammoniæ acetatis, is the most useful.

xii. In pneumonia venesection is often advisable, but the indications for this step are afforded by the condition of the heart rather than by that of the lung.

xiii. Immediately, and for some two or three days after the beneficent crisis of pneumonia has occurred, the evidence afforded by the pulse and the clinical thermometer is more important than that afforded by the stethoscope.

CIRCULATORY SYSTEM.

i. The superficial cardiac dulness in health does not extend to the mid-sternal line, but stops short about $\frac{1}{4}$ inch of it.

ii. Chorea in childhood is one of the many forms of rheumatism and should be treated as such. In the great majority of cases the choreic child either develops articular rheumatism, or has had articular rheumatism, or comes of a rheumatic stock.

iii. Heart disease, therefore, whether of endocardium, myocardium or of pericardium, is quite as frequently found in juvenile chorea as it is in rheumatism which affects the joints.

iv. Mitral stenosis is the most frequent cardiac sequel of acute rheumatism of childhood.

v. Statistics tell me that if mitral stenosis be discovered in adults, there is, in the vast majority of cases, a history of acute rheumatism, or

chorea, having occurred in early life, say between the ages of five and fifteen.

vi. When the intermittent pulse, which is often associated with myocardial changes, suddenly becomes regular and quickened, it is not a good sign.

vii. Southey lived before his time. The drainage tubes which are associated with his name are admirable methods of reducing dropsical accumulations, but the operation of inserting them, and the subsequent dressing must be absolutely antiseptic and Listerian.

viii. In anasarca due to heart disease we should remember that the heart itself may be, and often is, in a state of œdema.

ix. You may often, with advantage, give a patient who is suffering from cardiac failure a moderate dose of opium, even though he has some albuminuria.

x. Angina pectoris is often associated with, and an attack induced by, acute dyspepsia (hyperacidity).

xi. In aneurysm of the thoracic aorta I have never seen any benefit accrue to the patient from surgical operation on the sac itself.

xii. A patient suffering from aortic regurgitation alone should not be given digitalis in any form. I have recorded some cases and have notes of many others, in whom sudden and unexpected death has occurred after taking a few doses of this drug.

xiii. In aortic regurgitation it will be found that the patient's comfort is increased, and his dyspnoea is diminished if he has, in addition, mitral regurgitation—a kind of bicuspid "safety-valve" action.

URINARY TRACT.

i. Indicanuria is found in all cases of disease of the peritoneum, and of all affections of the mucosa of the bowel. It has, therefore, by its frequency, very little diagnostic value.

ii. The crystals of uric acid are especially large, with well-defined angles and borders, in glycosuria.

iii. In determining the presence of polyuria it is fallacious to rely on the evidence of frequent micturition. This may be due to irritation of the bladder. The urine should always therefore be measured.

iv. As a rule diabetics receive more benefit as hospital in-patients than as out-patients. This is due to enforced rest in bed and a strict diet, rather than to the action of drugs.

v. Sugar in small quantities is often found in the urines of patients suffering from tertiary syphilis.

vi. The patient who has chronic tubal nephritis most often dies from an acute attack supervening.

NERVOUS SYSTEM.

i. I have never known a case recover in which floccitation or carphology was present. The oldest writers have mentioned the gravity of this sign.

ii. Tremors in typhoid fever are usually indicative of deep ulceration of the bowel.

iii. A knee jerk is best elicited by obliquely striking the outer edge of the extensor tendon. I know not why.

iv. Severe delirium, apart from injury to the brain, is usually associated with some specific fever, such as typhoid, typhus, pneumonia, especially of the apex; but more especially is it associated with these fevers in an alcoholic subject.

v. The power of the will is a prominent factor in recovery from an illness. The patient who determines to live frequently does so, and in old age this determination to survive to a certain date is frequently observed. For example, in the periodical division of profits, whether annual, quinquennial, or septennial, which life insurance offices effect, it is frequently noted that feeble assurers survive, by an effort, to the date of the division and die soon afterwards. Experience teaches, therefore, that in the quarter immediately following a division of profits the death rate amongst the older policy-holders is unusually high.

SPECIFIC FEVERS.

i. In typhoid fever there is an odour from the patient's body as distinctive as that observed in typhus. The smell resembles that of damp earth, or of an ill-ventilated cellar or underground vault. During convalescence from this fever there can nearly always be found a fine wrinkling of the skin, with powdery desquamation, especially over the flanks and down the upper thirds of the outer sides of the thighs. The patient's temperature charts will, in the vast majority of cases, show a range below the normal line, for some week, ten days, or even longer, during early convalescence. This is especially so if there has been a relapse, or if the initial attack was very severe.

ii. In children with any form of febrility it is well to discount the temperature by 2° F.

iii. In children recovering from a fever, and in whom a sub-febrile temperature still persists, it will often be found that convalescence is hastened by a mild dose of alcohol.

iv. In convalescence from acute rheumatism I have often observed that a recrudescence of rheumatic pains and of temperature occurs after iron, especially the tincture, has been administered with a view to correct the anæmic condition.

SKIN.

i. Acne is a disease found especially in early adolescence. It is primarily due to his epoch. In women it disappears after the first pregnancy. In men it also disappears after marriage. This may be verified by many observations, notwithstanding the presence of micro-organisms in the hair follicles, as described by dermatologists.

ii. Chlorosis in the young woman usually cured by pregnancy.

DRUGS.

i. *Iodide of Potassium*.—You will obtain better effect from iodide of potassium by prescribing small doses (say, 3 to 5 gr.) for a few days, and then rapidly increasing the dose, than by giving large doses (15 to 20 gr.) at the onset.

ii. *Nux Vomica*.—In its action on the muscular coat of the intestine tincture of nux vomica is of more use than the corresponding dose of strychnia, which is not the only active principle which the nux vomica contains.

iii. *Opium*.—Children tolerate opium and morphia better than is generally supposed. It is merely a matter of dosage. In my experience morphia in $\frac{1}{8}$ to $\frac{1}{2}$ gr. doses, every two hours during the daytime, is the finest remedy which we have for whooping cough.

iv. Sarsaparilla in the form of a decoction is a most useful adjunct to iodide of potassium in tertiary syphilis. It should be given in large doses.

v. In erythema nodosum I have found nitrate of potassium (5 gr. doses) more quickly effect a cure than any other drug.

GENERAL EXPERIENCES.

i. Rare diseases are more common in the poorer or lower ranks of society.

ii. Those people ward off disease, or being attacked, have the best chances of recovery, who can afford and enjoy a generous dietary.

iii. In all cases of malignant new growth operate early—or not at all. The disease often has an unexpectedly rapid termination, although to all appearances the patient had made no adverse progress for the past week or more.

iv. Death rarely occurs from pulmonary hæmorrhage in phthisis. When hæmorrhage is fatal, it will be found on autopsy that the ruptured vessel was aneurysmal.

v. Gastric ulcer in young women is not a primary disease. In the great majority of cases it is a sequel or climax of chlorosis. Certainly, when inquiring about antecedent ailments in young women who present signs of gastric ulcer, it will be found that they have suffered from chlorotic anæmia.

vi. An acute attack of lumbago may often be immediately relieved by passing a stout needle into the erectorspinae mass of muscles on each side.

Such, gentlemen, are some of my experiences, and I place them before you, with all their "imperfections on my head." Possibly in the near future I may add to them in another lecture, for I have by no means exhausted them.—*The Hospital*.

SURGERY.

Furunculosis.

BY

L. SHINGLETON SMITH, M.B. Cantab.

A few remarks from one who has been a victim to such a common yet troublesome disease as furunculosis may not be entirely without interest.

So much has been said and written, and Bier's cup has been so widely advertised for the treatment of boils, that I venture to ask whether those who believe so highly in its merits have only taken it from hearsay or have actually proved its efficiency either on their patients or themselves.

The beginning of my attack of boils coincided closely with my purchase of a mare—to be strictly accurate, the boil followed the mare by about a fortnight—and accordingly I put down the saddle as the exciting cause, though there is no doubt that I had been very run down for a month previously. The boils began to arrive with a quiet persistence, generally one at a time, and occasionally two together, but as soon as one had run its course the second would be well on its way; at times they were so bad that I could neither ride the mare nor the bicycle, nor even drive, and had to give up work for a few days. Being thoroughly convinced by what I had read and heard of the utility of Bier's cupping treatment, and being desirous of ridding myself of such painful accessories, I vigorously applied the cup for an hour off and on both morning

and evening, and sometimes midday when I could find the time, but to my surprise and discomfort without the looked-for success.

I applied the cup to the boils when first recognised, that is when they were not bigger than a large pin's head, but the application seemed not to have the slightest effect. The boil continued to grow, and in about three days the inguinal glands would be affected, and the boil having reached the size of a small saucer, would gradually subside and the slough separate, sometimes with a little pus.

If I applied the cup in its later stages the induration would spread under the edge of the cup, and the application become most painful.

The only way in which the cup seemed to be of any benefit was after the free incisions (of which I had well over a dozen), when the matter and slough came away perhaps a little more readily than would otherwise have been the case. Various other treatments were adopted; but in spite of all—Bier's cupping, hot Jeyes' baths, sulphur and mercurial inunctions, and tonics—the boils kept the even tenor of their way, in no wise abating.

It was then, after much prompting, that I determined to try what vaccine therapy could do, and accordingly, from some pus sent them, the Clinical Research Association isolated and grew the staphylococcus pyogenes aureus, and in a short time sent me a dozen phials, containing different doses, 20, 25, 50, 100, 150, 250 and 500 million cocci. A few hours after the dose of 20 millions had been injected an extraordinary reaction, both locally and constitutionally, appeared. The boil, at that time getting well, became exceedingly tender and more painful than it had been at all, and after a few hours got better again. On the next day I felt a bit feverish, and the temperature rose to 103. I felt and looked so ill that Dr. A. J. Wright, who was very kindly doing my work and helping me with the injections, thought I was in for a bad illness. However, at 6 P.M. I arose and had a good meal, feeling perfectly well. After this increasing doses were given regularly about once a week, and at first slight reactions, both locally and constitutionally, appeared, but later no reaction at all. The boils gradually became fewer and less severe, and finally disappeared altogether for the space of six months.

All the boils during the latter period were painted with liq. iod. fort., and when detected and painted whilst quite small simply withered up and gave no further trouble, and if allowed to develop to say the size of a shilling, they spread no farther, came to a head, and the slough separated in a comparatively short time.

After the boils had ceased to come there continued to appear pimples which shortly became pustular, and with painting withered up, which clearly shows that the resistance had been increased, inasmuch that those same pimples two months earlier would have shown no sign of pus, but spread as an indurated phlegmonous mass affecting the inguinal glands. Six months later another boil came in the same region and presuming that the same organism was at work, an injection of 250 million was given; and following this there came at least a dozen commencing boils, all of which were painted with liq. iod. fort., and all of them aborted.

Whilst the injections were continued, at first at regular intervals, the boils steadily diminished in numbers, and there was no sudden outbreak of them as appeared six months later after the injection of a single dose of 250 million cocci. From this it appears that the immunity acquired had to a great extent disappeared, inasmuch as a boil appeared, and after the large injection a negative phase was manifested by the sudden abundant crop of small boils.

Three months later a small boil began, and another three months after that, both of which were aborted by the application of liq. iod. fort.

Although Bier's cupping has been highly lauded in the treatment of furunculosis, in my experience (a most painful one) application of liq. iod. fort. is far more efficacious, and this I put down to the following reasons.

Firstly, the iodine application produces hyperæmia in the skin and not in the fascia and subcutaneous tissue, as I think the cup is more apt to do, especially in the case of boils which are situated for the most part in the soft parts, such as the neck, back, and gluteal region, when the skin is readily lifted up and drawn into the cup without very much stretching.

Secondly, the iodine application is constant and always acting, whether the patient be busy or otherwise.

Thirdly, the iodine destroys the germs in the surrounding skin.

In all acutely hyperæmic states of the skin, whether they be due to sunburn, chilblains, toxic rashes, infectious fevers, or slight scalds, peeling more or less invariably follows, but I have never seen the application of Bier's cup followed by any tendency to desquamation.

This may in part be due to the inefficient method of carrying out the application, for to keep the part congested one must be constantly busy applying the cup, a method which forbids one to do anything else; and if in a region where one cannot apply it with the help of a looking-glass,

then it must prevent someone else from doing any work. It is quite impossible for a doctor on his round to apply the cup with any likelihood of doing good. In the case of iodine one can always apply it oneself; two and occasionally three coats may be necessary, but invariably within a short time the boil begins to mend.

Therefore we may presume that vaccine therapy is the most valuable constitutional remedy we have, but the immunity acquired is only temporary, whilst liq. iod. fort. is the most valuable and convenient local remedy.—*The Bristol Medico-Chirurgical Journal*.

The Important Role of the Larynx in General Anæsthesia.

By

SIR G. BEATSON, K. C. B., M. D.

IN the production of general anæsthesia the risks from respiration are not the least of the dangers that beset the administration of any of the drugs employed for that purpose, it being an admitted fact that even while the heart is still beating the breathing may be arrested, either gradually or suddenly. In the former case the cessation is generally due to the toxic effects of the anæsthetic on the respiratory centre, whereas a sudden stoppage may arise from more than one cause. Thus, it may be due—(1) to falling back of the tongue; (2) to asphyxia from vomited matters or the entrance of blood; or (3) to that particular form of paralysis and adhesion of the vocal cords that renders inspiration impossible, and yet permits of a certain amount of expiration. This last state of matters is very misleading and deceptive, for during it the movements of respiration are going on normally or perhaps more vigorously than usual, and yet no air enters the chest, with the result eventually that the breathing suddenly stops in full expiration. There is, however, another form a sudden cessation of the respiration connected with the action of the anæsthetic on the highly-sensitive mucous membrane of the larynx that specially merits consideration, for it is a source of danger both in itself and through the heart, and, I think, furnishes an explanation of those unexpected deaths that take place with very little warning soon after the administration of the anæsthetic has begun. To make clear what I wish specially to draw attention to, I must refer briefly to the respiratory apparatus and to the nervous mechanism that works it.

SOME PRACTICAL POINTS.

Without going into details, the apparatus for breathing consists essentially of the larynx, trachea, bronchi, and two highly-specialised

bodies the lungs, whose distinguishing feature is the elasticity of their tissue. Practically, they are two elastic bags, which can be enlarged so as to suck in air, and can then contract so as to drive it out, this variation in size being accomplished by that alternate expansion and contraction of the walls of the chest which take place in ordinary breathing. About the mechanism of these movements nothing need be said, but the following points should be remembered: (1) With the enlargement of the chest that accompanies inspiration a vacuum is formed within the lungs; (2) under ordinary circumstances this vacuum is filled chiefly by air, which rushes in to inflate the lungs, but also to some extent by blood, which enters the large venous trunks and the right side of the heart; (3) should there be any laryngeal or tracheal obstruction to the entrance of air, then the vacuum in the pulmonary alveoli tends to be filled by a transudation of fluid from the capillaries, producing a form of pulmonary œdema; (4) the amount of air that passes in and out of the respiratory apparatus during ordinary breathing (tidal air) seldom goes lower than the large bronchi; (5) the interchange of gases by which oxygen is introduced into the system and carbonic acid excreted takes place in the alveolar residual air of the lungs, and is carried out by the law of the diffusion of gases; (6) with ordinary respiration there are "associated respiratory movements" of (a) the nostrils and (b) the larynx, each of these structures dilating during inspiration and doing so by means of muscular action.

THE RESPIRATORY FUNCTION.

Before considering the actual arrangement of the nervous mechanism of respiration, the three leading characteristics of the respiratory function should be borne in mind. In the first place, it partakes of the nature of an automatic act. Secondly, it is, in addition, partially controlled by will. Lastly, it is profoundly modified by reflexes. All these three features are familiar to us. We breathe more or less unconsciously, we can "hold our breath" or increase our respiration, and we all know well the uncontrollable reflex gasp that seizes us when our skin experiences the sudden contact of very cold water. It is this reflex element that plays such an important part in the normal respiratory process, and is very often responsible for disturbance of its rhythmic character.

THE NERVOUS CENTRE.

Coming now to the nervous mechanism itself, it has been definitely established that there is a portion of the medulla oblongata which must be intact to allow of the movements of respiration being carried on. FLOURENS, who first discovered it, called it "noeud vital," but, generally,

it is spoken of as the "respiratory centre," it being, however, understood that it has two lateral halves, one for each half of the body, and is in reality a double "centre." Exception has been taken by some to the use of the word "centre" on the ground that respiratory impulses are not generated there, but this debatable question need not now be discussed. What is essential to bear in mind is that there is a certain limited portion of the medulla oblongata "at which the afferent nerves which call for respiration are brought into connection with all the various motor nerves which bring about the respiratory movements of the nostrils, larynx, chest, and diaphragm." (HILL.) In other words, it is the spot, or "centre," from which there arise automatically the rhythmical impulses necessary for the inspiratory acts, and to which there are also conveyed certain regular and irregular reflexes. That the latter should be present from time to time need create no surprise, for of all the vital centres the respiratory one is in closer touch with the whole of the body than any of the others. If any explanation of this be needed it is furnished by the fact that the respiratory tract has not only the power of warming, moistening, and purifying the air that enters the chest, but it has to furnish protection against the admission of any foreign bodies or irritating gases into the lungs. To enable it to perform this latter duty a portion of it has been specially adapted for the purpose. This is the part known as the larynx. It is placed at the upper end of the respiratory apparatus, just where it joins the alimentary canal, so that it is at a spot where it is common to both deglutition and respiration, and can guard the trachea against the entrance of particles of food and any pungent gases. As the vapour of several of the general anæsthetics in use, notably ether and chloroform, is of a strong and irritating nature, it is very important to understand the working of the larynx, otherwise the inhalation of the anæsthetic employed cannot be safely carried out.

INHIBITION.

The first point to bear in mind is that the ability of the larynx to afford protection to the trachea and lungs rests on the physiological fact that the glottis, through which the air finds its way into the lungs, can be partially closed, or even tightly shut, by certain of the laryngeal muscles. Possessed of this power, whenever any pungent vapour is inhaled the larynx either completely closes the glottis or tries to get rid of any fumes that may have got entrance to the trachea by the modified respiratory movements known as "coughing," or may even go a step further than this, and inhibit entirely all respiratory movements. The

second point to remember is that all these different degrees of protection are carried into effect by reflex action, and that the nerves concerned are the pneumogastric or vagi. They are not the only afferent nerves which can influence the respiratory centre, but they are the ones most constantly active, and they come most into play through their superior laryngeal branches. It is these latter that supply the mucous membrane of the larynx and confer on it its great sensibility, and they can so materially affect the breathing that they are termed "the inhibitory nerves" of respiration, seeing that their stimulation can arrest the reflex action upon which the movements of the chest and diaphragm depend.

THE ROLE OF THE LARYNX.

From what has just been said it will, I think, be quite evident that the larynx must play a very important role in the administration of any anæsthetic possessed of an irritating vapour, for its use in too concentrated a form may induce closure of the glottis, or coughing, or even complete arrest of respiration—any one of these conditions seriously interfering with the success of the anæsthesia. Hence it may be taken as an invariable rule that at the commencement of the administration of any pungent anæsthetic the whole attention should be concentrated on the management of the larynx, and that the aim should be to anæsthetise it first, so as to allow of there being given later these larger doses of the vapour by which alone general anæsthesia can be attained. This preliminary anæsthetising of the larynx can only be accomplished (1) by the local action of the anæsthetic and (2) by whatever vapour finds entrance to the blood from the lungs. If no vapour gets access to these organs owing to spasm of the larynx, or coughing, or arrest of breathing, then no progress is made with that dulling of the laryngeal mucous membrane which is so essential for obtaining a quick and safe general anæsthesia.

SOME GUIDING RULES.

Attention to the following rules will, I know from experience, materially assist in overcoming the laryngeal sensibility:—

- I. Remember that the object aimed at by giving the anæsthetic is to send the patient to sleep. This should be taken as the guiding principle in everything that is done in the first steps of the administration, and for it there is the highest authority, as in the first case of surgical general anæsthesia on record the Biblical narrative tells us that a deep sleep fell upon Adam. The French, too, recognise the same fact, as the word in use by them for anæsthetising any one is "endormir": to

send to sleep. Taking this, then, as a guiding principle or, rather, working basis, it follows that the position of the patient should be one of comfort, and should be the attitude preferred by the individual when he or she lies down to rest every night. This, of course, varies. Some like to sleep with the head raised, and others with it low, but preference should be given to the one in daily use, unless it is one very much out of the common, for, of course, all unnatural positions of the head are barred in administering an anæsthetic. This point settled, attend next to what is done by most individuals before retiring to rest—that is, the removal of any artificial teeth from the mouth. Lastly, as far as possible get the patient freed from all grounds of apprehension or alarm, for a person unduly anxious is not favourably placed for going to sleep. Perhaps the most common cause of dread is the fear of being suffocated, a feeling best dispelled by the assurance that plenty of air will be given and that the anæsthetic will be very sparingly used at first. With the mind so relieved, the patient to be anæsthetised will feel more at ease, and be better placed for facing what can only be described as a trying ordeal.

2. In your administration carry the patient with you. This may be done by a brief word of explanation as to what the administrator wants the patient to do, and by pointing out what great assistance may be given by quiet and steady breathing or by slow and regular counting aloud. Obtaining in this way the co-operation of the patient is exceedingly valuable, and yet means are seldom taken to explain to the individual to be anæsthetised any of the steps of the procedure, so that there is eliminated a factor of very great importance.

3. The administrator should use a drop bottle for the anæsthetic and should sprinkle only a few drops on whatever apparatus is used, being very careful to see that there is a proper admixture of atmospheric air with the vapour and that it is so diluted that breathing or counting can be comfortably carried on. If there is the slightest interference with either, the apparatus used should be withdrawn and the patient allowed an inhalation of pure air. Comfortable and free inspiration is essential for safe anæsthesia. The point to bear in mind is that it is not the amount of anæsthetic poured on the apparatus that induces narcosis, but what gains admission to the lungs, and that when there the vapour makes its way to the air-cells by diffusion, a not very rapid process, and one that cannot be hurried. It has been, perhaps, too much lost sight of that SNOW showed conclusively that eighteen minims of chloroform slow-progressively administered will produce in an adult loss of sensation, consciousness, and motion, all that is required for any ordinary surgical operation.

4. Avoid, too, in this early stage of anæsthesia, all meddlesome manipulations about the mouth and jaw. There should be no swabbing out of the mouth, and no unnecessary manipulations of the jaw. There should be an entire absence of meddlesome anæsthesia, which is not in keeping with sending anyone to sleep. As long, too, as counting is continued there is no need to test the lid reflex.

With careful attention to the above points the initial difficulties connected with the larynx will be obviated, and the way opened to a successful anæsthesia. On the other hand, neglect of them may delay the anæsthesia, or may introduce into it complications and even serious disaster. Thus it is well known that the proximity of the respiratory and vomiting centres in the medulla may lead to the occurrence of the latter act, for irritation of the respiratory centre often induces nausea or even actual vomiting, a very troublesome complication during the induction of anæsthesia. Through the superior laryngeal branch of the vagus such irritation could be easily conveyed. What, however, is of greater consequence is that the sudden closure of the glottis that may be induced reflexly through the laryngeal irritation of a strong dose of a pungent anæsthetic may be fraught with great peril to the patient in another way—namely, by indirect action on the heart. This risk is associated with the fact pointed out by HUXLEY that if a strong expiratory effort is made when the lungs are distended, and the entrance to the air passages is closed, the heart's action may be stopped altogether. So in the same way, if the lungs being partially emptied and the entrance of air prevented, a strong inspiratory effort is made, a similar result may take place. In the first case, as HUXLEY says, the reason of the stoppage is not very clear, but under the second condition the excessive distension of the heart, in consequence of the flow of blood into it, may be the cause of the heart's arrest. In either case, it is quite apparent that a very anxious situation is created, and it is quite possible that it may furnish the explanation of those sudden and mysterious deaths that from time to time happen in the very early stage of the administration of an anæsthetic. It is on these grounds that I hold that the slow and gradual anæsthetisation of the larynx is the matter that claims the whole attention in the beginning of the procedure, and that the above lines are the ones to work upon to ensure safe and quick results from a general anæsthetic—*The Hospital*.

**Some Advances in Surgical Practice noticed during
Furlough (1909).**

BY

B. M. LIVINGSTONE LEARMONTH, M. B., SINMINFU.

This paper is addressed to those who have been out in China for some time and who may wish to learn, from one who has just returned, a few of the practical changes which have come into vogue in the West. One often longs to know how many of the new methods one has read of in the medical journals have met with the approval of the leading surgeons at home. I must crave the forbearance of those who like myself have recently returned from furlough and the indulgence of those who, having come fresh from the stocks, will see nothing new in the things which struck me. I trust that they will make up my deficiencies in the discussion which will follow.

My remarks are based on observations made in the Edinburgh Royal Infirmary.

TREATMENT OF FRACTURES BY MOBILIZATION AND MASSAGE.

One of the most noticeable changes is in the treatment of fractures. Many fractures of the arm are treated from the first without splints, only a sling; and in nearly all fractures of the extremities the limb is massaged daily and passive movements carried out according to the practice of Lucas-Championnière. He lays down one or two important rules. Massage must be gentle and on no account give pain. Mobilization must always be of very short range, gradually increasing.

Reasons for this treatment.—One of the great hindrances to rapid repair is the contraction, spasm of the muscles, and this is more efficiently overcome by the soothing action of stroking massage than by rigid apparatus. It is impossible to effect immobilization without, to some extent, interfering with the circulation and so delaying repair.

Results.—The results obtained by this treatment are very satisfactory. There is a great alleviation of pain and spasm; thus overcoming the tendency to shortening. The patient has the full use of the limb by the time that under the old method firm union had taken place; he is saved the long period of stiffness and pain which followed his release from splints. The stiff joints which so often result from fracture near a joint and which last longer the older the patient, and in so many cases are permanent, are avoided or greatly ameliorated.

One drawback is the drain on the surgeon's time. In a large hospital several trained masseurs are constantly employed, but I am

told that there is a danger of even experienced masseurs carrying out mobilization not at the adjacent joint but at the seat of fracture. But the loss of the surgeon's time is the gain of the patients.

A practical hint is to use French chalk on the hands when massaging.

GLOVES.

Rubber gloves are now largely used for operating. Most surgeons use them regularly, but some prefer to use them only in septic cases; even they use thick rubber gloves while scrubbing the skin of the part before an aseptic operation.

The cost for gloves at the Edinburgh Infirmary for one year was £90 or gold \$450. At first sight it seems as if the cost of gloves would be prohibitive in the conditions under which most of us have to work, but the cost of gloves is now much reduced; probably, however, it has risen again since the rubber boom. Mine cost 2/6 a pair for medium thickness, 2/3 for thin. As for durability; there is no doubt that if frequently subjected to high pressure steam they after a time become friable, but there is no need for this, as they can quite well be sterilized by rubbing in strong antiseptic solutions, which do not seem to injure them, as I have been using six pairs constantly for six months without any apparent deterioration.

They are a great comfort, as they prevent the cracking of the skin, which is inevitable during the cold winters if the hands are frequently immersed and scrubbed in antiseptics which are effective.

They are a powerful reminder both to oneself and one's Chinese assistants against touching any unprepared surface.

If not frequently dipped in lotion they become sticky, so that they obviate the risk of one's becoming so engrossed in the operation as to forget to frequently dip one's hands. They are of at least three thicknesses—thick, medium, and thin. Of the medium and thin two kinds are sold, rough and smooth. The object of the roughening is to afford a better grip of instruments, but I find that a perfectly good hold can be taken with the smooth, and naturally they are more readily sterilized by antiseptics.

Just at first one is apt to prick them or push the butt of the needle through them, but one quickly becomes used to them and the holes are easily repaired by means of a bicycle repairing outfit and pieces of a torn glove.

They should be ordered half a size smaller than one uses in kid gloves, so that they may fit tightly and prevent puckering, with the

consequent liability to be pricked. I find those of medium thickness most suitable. Before putting them on, the hands must be well cleansed and dried with sterile gauze and then both hands and the inside of the gloves must be dusted with French chalk. Some thin finger stalls must be in readiness to slip over a finger in case of puncture, or the gloves must be changed, as the hands perspire and the wound would become infected.

The gloves must be taken off before bandaging, or lifting a patient, or they will be torn.

STERILIZATION OF THE AREA OF OPERATION BY MEANS OF TINCTURE OF IODINE.

The part is well washed the day before and covered with dry lint. Just before the operation the part is painted with tincture of iodine, which soaks into the crevices of the epithelium. No washing is done except the day before, lest these crevices should be filled with wet epithelial debris, which prevent the entrance of the iodine. Acetone has been used as a solvent of the iodine on account of its greater penetrative power, but I have had no experience of that. This tincture of iodine method is of very great use in treating out-patients. I am informed that the Japanese surgeons during the Russo-Japanese war used to sterilize the tips of their fingers by this means. I have found it irritating to the skin sometimes as in operation through the scrotum and prefer Harrington's solution for that part.

ADMINISTRATION OF ETHER BY DROP METHOD.

Having been trained in Edinburgh where one was so to speak brought up on chloroform, one could not fail to notice the advance of ether as an anæsthetic. It will strike our American colleagues as extraordinary that during my medical course—1891-96—I never saw ether administered. Now I found that even in Edinburgh ether is being used, but only in special cases, or where during chloroform administration the heart shows signs of failure.

No elaborate apparatus is used, as it is believed that much of the post-ether lung troubles have been due not so much to the ether as to the want of cleanliness of the rubber bag. An ordinary wire mask is used, such as is used for chloroform, but covered not with lint but with a layer of cotton wool about a quarter of an inch thick. A strip of the same thickness—two inches wide—is placed under the edge of the mask to raise it off the face and fill up all crevices between it and the face.

The ether is poured into the mask from a freely flowing drop bottle. As a much greater quantity of ether is necessary, its administration is more expensive than that of chloroform.

To one only used to the administration of chloroform, the cyanosis is alarming, but it is said to be really less dangerous, and it may be entrusted to even a careless administrator without fear. The breathing also becomes stertorous from the accumulation of phlegm in the throat, but that may be prevented by the injection of $\frac{1}{120}$ grain atropine about $\frac{1}{2}$ hour before operating.

It is found specially useful :

1. In abdominal cases where the vomiting following chloroform is to be feared.
2. In order to avoid the post-chloroform poisoning which has proved fatal to many children within a few days after operation, specially abdominal operation.
3. In cases where the heart is weak.

Chloroform is generally, but not always, used first to put the patient 'over'.

IMPRESSIONS OF ETHYL CHLORIDE AS A GENERAL ANÆSTHETIC.

Having read of the advantages of ethyl chloride over chloroform I made enquiries on arrival in Edinburgh, but found no surgeon to recommend it.

However, in the dental department I saw it used, and administered it several times. It was only used in conjunction with nitrous oxide. After 30 seconds' inhalation of laughing gas, a measured quantity of ethyl chloride was tipped during an expiration into the bag. The anæsthesia lasted about 50 seconds, and in a short time the patient could be led off to one side. They were putting through the patients at the rate of 15 per hour. This rapidity appeared to be the chief advantage of the method, for most of the patients went into a condition resembling an epileptic fit with clonic spasm of the muscles, a condition most unsuitable for a surgical operation.

BIER'S ACTIVE HYPERÆMIA AND PASSIVE CONGESTION.

In a modern out patient department a surprising number of glass bells are in use of varying shapes to suit all manner of acute inflammations, such as whitlows, boils, carbuncles, etc. The edges of the bells are smeared with vaseline to make them fit close to the skin, and to the domes are attached rubber tubes, through which the air is abstracted by means of rubber balls or any form of aspirator. As rubber balls are so apt to spoil in this climate, I use an antitoxin syringe and a clip to pinch the rubber tube when a sufficient quantity of air has been withdrawn. It is often left to the patient to apply the exact amount of suction to relieve pain, and this may be taken as a test of the effective amount of suction. The object of course is to bring a fresh supply of opsonin-

bearing lymph and leucocytes to the part and so a free incision is made where necessary.

The other method of passive congestion by means of constriction of the limb above sufficient to impede venous return, is now much more largely used than formerly, not only for tubercular disease but with even more success in other chronic ailments, such as chronic rheumatoid arthritis, indolent ulcer of the leg, or chronic sinus. I have used it with great success combined with splints in tubercular elbows with sinuses; the sinuses gradually closing and the joint recovering a considerable amount of mobility.

Patients must be warned against applying the bandage for more than 1 hour a day. I saw in Edinburgh a man who had been so pleased with the result of the treatment that he thought he could improve it by applying the bandage for 24 hours or more continuously; the result was that his leg appeared as if he had elephantiasis.

I have been very much pleased too with the similar method of treatment suggested by Sir A. Wright in cases of carbuncle or any acute inflammation where the pus is thick and no adequate flow follows upon incision, namely, the internal administration of sodii citras in dram doses three times a day. This decreases the coagulability of the blood and causes increased flow of lymph. The principle is the same as Bier's method, but it can be applied in some cases where it is impossible to apply constriction or any glass suction apparatus.—*The China Medical Journal*

Anæsthetics in Cases of Heart and Lung Disease.

BY

JOS. PH. BLUMFELD, M. D.

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The question of anæsthetics in cases of disease within the chest is interesting, and also of importance, from two points of view. There is firstly the question of the extent to which the disease within the chest increases the danger of anæsthesia, and secondly the question of so choosing and administering the anæsthetic as to reduce this danger to a minimum. Now with regard to the first point, the bearing of disease of heart or lungs upon the safety of anæsthesia, I would like to say that there seems to me to be still a large amount of mistaken opinion. At any rate where the heart is concerned, it has been a common experience of my own, and I know of other anæsthetists, to meet with cases in which the opinion has been confidently expressed by a physician or the patient's

own medical attendant that the administration of an anæsthetic was dangerous, whereas subsequent events have shown that this was not the case. Much harm may be done by telling a patient "that he is not a fit subject for an anæsthetic" because of his heart. For when the necessity arises for him to undergo an operation the risks of anæsthesia are materially increased by the fears that have been instilled into him. fears based upon a mistaken notion of the importance of cardiac signs with regard to anæsthesia. Patients with every variety of heart murmur and with every kind of pulse peculiarity have been anæsthetized with perfect safety, and the anæsthetist knows that these cases do not ordinarily provide him occasion for anxiety at all. Yet it is in these cases that one has so commonly to reassure the patient, and get him to ignore the gloomy prognostications which have been prophesied for him. I am not now talking, of course, of cases of advanced heart disease with broken compensation; here the danger is real enough, and we shall discuss later how best to meet it; but I am talking of the common case when, because there is an audible murmur, often the only symptom present, or because there is an intermittent pulse, or because there is a liability to fainting attacks, the patient is therefore told that he must not take an anæsthetic. This opinion has, in my experience, invariably been falsified by the safety and the freedom from dangerous symptoms with which these patients have passed through anæsthesia. As a matter of fact, in the case of irregular and intermittent pulse, where, as Dr. Goodheart has so admirably pointed out in a recent lecture, the apparent cardiac defect is in reality a nervous one, here, as might be expected, the effect of anæsthesia is not detrimental, but is actually of marked benefit to the action of the heart. In these cases when the faulty nervous control, presumably dependent upon action of the higher cerebral centres, is removed by unconsciousness, the pulse becomes regular and quiet, and of no undue frequency. Nor are these patients especially liable, so far as I have observed, to suffer unduly from surgical shock in the course of operation. It is the same in cases where the only evidence of heart disease is a murmur. Whether this murmur is mitral or aortic or tricuspid, if it is not accompanied by signs of back pressure such as breathlessness or œdema, anæsthetists know that it affects the patient's behaviour so little during anæsthesia that no departure is made from the ordinary routine in selecting and in administering the anæsthetic, with this proviso that in these cases, and particularly when the murmur indicates mitral stenosis, care is taken not to allow cyanosis to occur; methods are chosen, that is to say, which admit of free air supply throughout, and closed apparatuses are, generally speaking, avoided.

There are two varieties of pulse which need special mention, as they are, unlike those already referred to, liable to be accompanied by unusual symptoms during anæsthesia: these are the cases of unusually slow and of unusually rapid pulse. When there is an unusually slow pulse, if the patient is elderly, there is a tendency for extreme shallowness or irregularity of respiration to appear during anæsthesia. In young subjects with unusually slow pulses I have never yet noticed any abnormal behaviour. When the pulse is very rapid it will, as a rule, be slowed by anæsthesia, but when the rapidity depends upon Graves's disease this is not the case: in this disease the risk of general anæsthesia is undoubtedly great, but as it hardly comes within the scope of our present subject I will not enter upon the elaborate methods that have been suggested for diminishing this risk in cases of exophthalmic goitre. With regard to disease of the heart muscle, such as fatty degeneration, much the same may be said as with regard to cases distinguished only by murmur or by pulse irregularity: these cases do not prove especially dangerous with regard to anæsthetics in actual practice. Not many years ago nearly every death that occurred during chloroform inhalation was put down to fatty heart, and probably from this attitude arose the idea that persons in whom such a condition of heart was suspected were the subjects of extra risk if anæsthetized. It is pretty certain, however, that a great many of the so-called fatty hearts would not have justified their title if they had been submitted to the microscope, just as some cases that are now called 'status lymphaticus' have too little real evidence of this condition to warrant the name. *Post-mortem* findings apart, however, it may certainly be said that clinically cases of cardiac degeneration may be safely anæsthetized. Very fat people are certainly not generally good subjects, whatever the state of the heart, but trouble when it arises is generally associated with difficulties of breathing, not primarily of the circulation.

In cases of pericarditis with effusion when an operation is undertaken for relieving the tension of fluid around the heart the administration of an anæsthetic entails, of course, considerable risk. These patients are breathing with great rapidity and with considerable effort, and in a position in which operations cannot be performed. They are sitting up and leaning forward. It is best to anæsthetize them very gradually in this position, using a mixture of chloroform and ether freely diluted with air, and as unconsciousness comes on gradually to alter the position to one in which the surgeon can operate. A very deep degree of anæsthesia is not required, and the less time occupied in operation the better. Great improvement both of pulse and of respiration ensues upon the

opening of the pericardium and the consequent release of pressure upon the heart.

A more common condition in which anæsthetics are sometimes required and in which the condition of the heart causes danger, is that in which owing to long-standing bronchitis and emphysema there is secondary cardiac dilatation. Such a condition of affairs is seen sometimes, for instance, in elderly men requiring the operation of prostatectomy. Here, so far as safety at the time is concerned, I suppose every anæsthetist would like to be able to use ether. Yet this drug by itself is generally out of the question in these cases. It causes irritation of the air passages and spasm, and even if used by the open method anæsthesia cannot be induced by it without much coughing and cyanosis, conditions which throw dangerous strains upon the already overtaxed heart. A mixture of chloroform and ether answers much better, but in many cases chloroform is the only anæsthetic to be recommended. In administering it, it is essential to proceed very slowly, and it is only by gradual administration of a weak vapour that an undue amount of muscular excitement can be avoided. If such excitement does arise, as in certain types of subject it will, however carefully the anæsthetic is given, then during the excitement stage some ether should be used upon the open mask. Very little is required, but its presence diminishes the risk that is entailed upon the heart during the time when there is muscular spasm with temporary holding of the breath. Another aid to safety in these cases is the addition of oxygen to the chloroform. This can be very easily achieved, and is of great value in all cases where there is dyspnoea. The value of oxygen during chloroform anæsthesia is not sufficiently recognized, yet it rests upon the firm basis not only of clinical experience, but also of experimental evidence. Dr. Waller, at the University of London, has made some experiments which show in the clearest way the beneficial effect of oxygen in warding off the depression of heart and of the respiratory centre that may ensue upon the inhalation of chloroform.

Besides these experiments there are some of Dr. Willcox's in which the oxygen is made to bubble through pure alcohol. So far as the heart is concerned the effect thus produced is even more remarkable than with oxygen alone. In hospital work this method can easily be employed, and, in fact, the necessary apparatus is so simple that it can easily be arranged in a private house. It is, of course, only necessary to use the alcohol when the patient's condition is very grave. At St. Mary's Hospital I have had opportunity of using it in such cases with highly satisfactory results.

The value of oxygen with chloroform is even more marked in cases where it is not the heart but the lungs that are defective. In every case where the lung area at work is diminished below the normal, whether from disease of the lung itself or through inefficient expansion of the chest, oxygen is a great aid to success in anæsthesia; in cases of bronchitis, or in such cases as empyema on one side with considerable affection of the opposite lung, oxygen is invaluable.—*The Polyclinic*.

The Disinfecting Power of Iodine.

BY

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1. The skin, even soaked with various micro-organisms, can be disinfected with 2% solution in one hour.

2. With 5 % solution it can be disinfected in 15 minutes.

3. Hair is no objection as it can be easily disinfected. The only objection is that it may act as a foreign body and cause an irritation.

While doing these experiments I have examined various pieces of stained skin under microscope and found that the Iodine soaks into the root of hair follicles within a few minutes.

Since returning home on 6-9-10, I have used Iodine solution and found that the wounds heal just as well as in other methods.

The method I adopted was :—

1. To clean the skin with soap and water the night before the operation.

2. The next day, 2 to 3 hours before the operation, the skin was painted with 2% Iodine solution.

3. Again just before the operation in the theatre.

In emergency cases I simply wiped the skin clean with dry gauze and applied 5% Iodine solution at once. After about 15 minutes I proceeded with the operation.

In one case, a boy 10 months old came up with a comparatively large strangulated inguinal hernia, I simply painted over with 5% Iodine solution after cleaning the skin with dry gauze. The wound healed with first intention and the patient made an uneventful recovery.

In several cases of injury I only used 5% solution without washing and obtained very good results. A few points requiring attention are:—

1. The most important is that the Iodine should be dissolved in rectified, not in methylated spirit.

The moisture weakens the power of Iodine.

2. The skin must be dry and not moist.

3. Iodine solution increases the vascularity of the skin and subcutaneous tissues, and therefore the superficial hæmorrhage is greater than normal.

4. The skin is distinctly hardened and in consequence the knife becomes often quickly blunt.

In my own cases I found that although 2% solution caused no irritation, yet in a few cases of 5% solution some slight irritation was noticed.

It is worthy of note that the staining caused by the Iodine solution is at once removed by soaking the towel or dressings in a weak solution (2 to 4 %) of carbolid acid.

In conclusion I should like to add that the skin can be disinfected completely with Iodine solution in a short time and that in consequence, in operative cases, where the time for preparation is short, it might be adopted in preference to the ordinary soap and water method. Besides, the method is quite simple and can be done without disturbance.

The only objection I can think of is where the hemorrhage is disadvantageous to the patient, because there is no doubt that the hemorrhage is greater owing to the increased vascularity.—*The sei—I—kwai—Medical Journal*.

THERAPEUTICS.

Dangers of Menthol Preparations in Infants.

Recently P. F. Armand- Delille directed attention to the production of symptoms of asphyxia in infants by the nasal instillation of oily solutions of menthol. In a child, aged 3 months, suffering from bronchitis, 2 drops of mentholated oil were introduced into the nostril from a warmed teaspoon, the infant lying on its back. The child was immediately seized with spasm of the glottis, which persisted for 50 seconds, during which there was complete apnoea and marked cyanosis. A bath at 104° was given, when a few inspirations followed, but such abundant secretion of mucus occurred in the naso-pharynx that it was only after it had been mopped out several times that respiration was possible. It was only after a second bath that normal respiration was established, the condition lasting about 15 minutes. Malibran has observed spasmodic symptoms of an alarming character in a child of some months from the same cause.

Two similar cases have been observed by L. Mayet. In the first a girl, aged 4 months, was seized with asphyxia on the introduction of menthol in vaseline into the nostrils. For about 10 minutes she appeared to be dying, and it was only after an hour's treatment by mustard baths, artificial respiration and aspiration of mucus from the nostrils that danger was averted. In the other case, in a girl, aged 10 months, the instillation of a few drops of a 2 per cent. solution of menthol oil provoked hypersecretion of thick mucus, which completely obstructed the pharynx and probably also the larynx.

In Germany a similar case has been recorded by W. Koch. The nostril of an infant, aged 3 weeks, suffering from acute coryza, was mopped out with a tampon of wool moistened with a preparation of menthol. The child was immediately attacked with symptoms of asphyxia, complete apnoea, and cyanosis. At the same time there flowed from the mouth an abundant white frothy secretion, and it was only by the constant removal of this and artificial respiration for about half an hour that the symptoms ceased. That the symptoms in this case were due to the menthol and not to mechanical irritation was shown by the fact that mopping the nostrils by a similar tampon without menthol caused no inconvenience.—*The Medical Review*.

OBSTETRICS AND GYNÆCOLOGY.

Exophthalmic Goitre and Pregnancy.

On February 8th last, we were consulted by Mrs. M., aged thirty-two. The symptoms that induced her to consult us were dyspnoea, sleeplessness, and general weakness. Examination revealed that she was about seven months advanced in pregnancy, eyeballs very prominent, pulse about 120, no perceptible enlargement of the thyroid, very restless, and easily excited. Stellwag's and Græfe's signs were both present. The urine was highly albuminous. She was sent to Medicine Hat General Hospital, and put to bed. A meat-free diet with a very small quantity of salt, was ordered, and bromides and hypnotics were given for the restlessness. She improved considerably under this treatment, although an occasional hypodermic of morphine was needed to secure sleep. She had been married ten years, and had never completed a pregnancy, though she had had one or two miscarriages.

At the time of her admission we were unable to procure any quinine hydrobromate, which we proposed to give her after the method advocated by Forscheimer, *i.e.*, five grains four times daily, with the addition of

one grain of ergotin to each dose if improvement is not noticed in forty-eight hours. This, however, we got later and started its administration, but without result, except to upset her stomach. It was therefore discontinued.

On February 25th she suffered from toothache, which caused a wakeful night, and the following evening she developed a slight attack of tonsillitis. Her temperature, which had up to this time been normal, rose to 102°, and her general symptoms became aggravated. About two o'clock on the morning of the twenty-eighth, labour pains began, and she was transferred to the maternity department. Her temperature at 8 A.M. was normal, and her throat trouble was practically well. Labour progressed slowly, and at 11.30 A.M., the os being fully dilated, a little chloroform, less than a dram, was administered, and the child delivered in a few minutes by forceps. There was less than the usual amount of post-partum bleeding. The child was living, and apparently about seven and a half months.

Following the labour, she felt very much better, both physically and mentally, and hoped that her troubles were over. At 6 P.M. the same day, she had a chill, and her temperature rose to 102.8°, pulse 148, and respirations 50. Severe diarrhoea set in, which continued in spite of treatment, her bowels moving almost continuously. The bowel movements were dark green liquid. At 2 P.M. the following day her temperature reached 104.6° in the axilla. She was exceedingly restless, and delirious, her abdomen became much distended, and she died in coma at 9.30 P.M., March 2nd.

The fatal termination in this case was apparently due to hyperthyroidism. The rapid onset of the symptoms, beginning a few hours after labour, would eliminate the possibility of infection, and the symptoms were not such as would suggest either uræmia or eclampsia.

Any literature to which we have access does not enter very deeply into the matter of exophthalmic goitre complicating pregnancy. Ochsner and Thompson's recent work on the thyroid, mentions that pregnancy is a serious complication of the disease, but does not suggest any special treatment. Edgar, in his "System of Obstetrics," says that pregnancy is also an unfavourable occurrence in a patient afflicted with Graves' disease, and further states that unless the symptoms are very severe, interruption of the pregnancy is not indicated. In a recent article by Crile of Cleveland on the causes of hyperthyroidism following operation, it is held that the shock and psychic elements are responsible for the symptom complex known as hyperthyroidism. The case above reported would seem to uphold his contention.

There are a few questions suggested by this case: Was the albuminuria, which persisted through the entire course of her trouble, while under our care, caused by the exophthalmic condition, or only a complication? There were no symptoms such as general oedema, headache, impairment of vision, etc., noticed at any time. Finally, and what is of particular interest to us, considering the unfortunate outcome of the case, would the earlier induction of labour have improved her chance for recovery?—*The Canadian Medical Association Journal*.

▲ Clinical Lecture on the Medicinal Treatment of Uterine Hæmorrhage.

BY

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In the first place, a possible pregnancy, or the interruption of one with accompanying hæmorrhage, must be excluded, and also the possibility of the disease causing the hæmorrhage must be accurately weighed.

Menstruation can only be considered to be a physiological process when it takes place in a certain regular manner. This regularity concerns less the quantity of blood, which is subject to great individual variation, less also the length of the period, which may vary from half a day to five and even six days without being considered as not physiological; then, above all, the regular onset of the hæmorrhage, which, of course, need not be an exact period of twenty-eight days, but which should, nevertheless, be within the limits of twenty-five to thirty days, and which must be held to be physiological, so long as it keeps within about these limits in the same individual. Any deviations in the same individual, although they may not be looked on as a symptom of disease of the uterus, must at the same time be held to be a sign of some processes of irregularity of the whole system that have led to the irregular onset of the menses.

When hæmorrhages take place in a quite irregular manner, it is almost always pathological. When a young girl bleeds once, then after eight weeks has another hæmorrhage, has a free interval of three months, then bleeds again, it is quite natural, and does not require treatment. It is different, however, when the hæmorrhages take place in such a way that the first or second period lasts ten to fourteen days, then, after a pause of a day or two, begins again, lasts a long time, persists with more or less freedom for weeks or months; such a condition certainly calls for

treatment, especially when the hæmorrhage is excessive to such a degree that one fears that the child is losing too much, considering the amount that has to be replaced at such an early period of life. Whilst amenorrhoea in the great majority of cases does not require treatment, and should be only looked on as a symptom of anæmia, or deficient development of the organism as a whole, or of the genital system alone, irregular hæmorrhages that are excessive in quantity or that last too long in the early days of the period of puberty, must always be treated.

When does an organ bleed, or when does the bleeding not cease? Independent of deficiency of the clotting power of the blood, there are two chief factors to be taken into consideration. Either there is failure on the part of the arteries to close by compression, or there is an obstruction to the venous outflow with persistent arterial flow.

As to the bleeding from the uterine mucous membrane, its cessation is spontaneous under normal conditions. The contractions of the hollow muscular organ arrest the capillary hæmorrhage from the mucous surface equally by pressure and counter-pressure. An interruption of this mechanical process takes place when the contractility of the smaller arteries ceases or is diminished and becomes too small, when the muscular power of the uterus is not sufficient to bring about an adequate compression of the mucous membrane either as regards present intensity or length of time, or when, through processes going on in the neighbourhood of the uterus, or in its substance, the backward flow of venous blood is barred, the arterial flow is still persisting.

If by bleeding, then, we understand, not simply the physiological process but a material deviation from the normal, we can distinguish two larger groups: arterial hæmorrhage with diminished contractions, and venous, in which the uterus may contract firmly.

The contraction of the musculature of the uterus leads to compression of the arteries in the uterine walls even to their finest branches. It further leads to compression of the bleeding surface, which represents the walls of a divided space; it therefore acts by pressure, like a tampon.

Arterial bleeding, therefore, is explainable by want of contraction. Apart from the cases in which a change of form of the organ prevents equable pressure on the mucous surface, as occasionally is the case when myomata are present, failure of muscular contraction, insufficiency on the part of the muscular apparatus may be a cause of the hæmorrhage continuing. Such an insufficiency may be temporary or lasting. Atony is typical of the first form, such as is met with in labor at term or prematurely. Atony may be present outside the period of puerpery.

Insufficiency arises from simple relaxation of the muscles; good muscles capable of contracting are present, but they do not do their duty. It will be the aim of the attending physician who wished to arrest the hæmorrhage to bring the muscles to contract. This may be brought about mechanically by mechanical stimulus, by electrical treatment, or by massage. It is brought about in the simplest manner by the hæmostatic remedy *secale Eorru* ergot and its derivatives.

There is, however, another condition of the muscles that does not give rise to a temporary atony, but to another kind of insufficiency that is lasting and caused by weakness of the uterine muscles.

It may be taken generally that freshly gathered ergot is the most active, as it loses its power in about three months, and from that time on, the older it is the less powerfully it acts.

If we are in possession of an ergotine always of the same power—as, for example, sekakornin—the point of view of the body weight of the patient must always be kept in view.

Kornutin (Kobert) has an absolutely certain action. It is so dear, however, that it can only be ordered as a substitute for the very cheap pulv secale cornutum in exceptional cases.

In cases of a particular kind I would not try to do without kornutin as when wishing to apply a test. A negative result, complete absence of any hæmostatic action in spite of energetic contractions of the uterus, proves that we need not expect to arrest the hæmorrhage by setting up uterine contractions. The attempts to arrest it must be made in some other way.

A by-effect of the fresh preparation, especially when it is at its best, is important. Freshly powdered secale cornutum, that acts particularly well in producing uterine contractions, frequently causes vomiting, or at least an inclination to it. It would be wrong, however, to conclude that vomiting or an inclination to it (and as a rule it stops at that) showed that the drug was unsuitable. The patient should, however, be warned in time of its possible effect in that direction.

Independent of the individual differences that occur in different individuals, some requiring larger doses with the different intervals of administration, regard must be had to the uterus, and, above all, pregnancy. A pregnant uterus is acted on differently from one that is not pregnant; a uterus post partum that has a strong tendency to contract will, under certain conditions, react strongly to a certain quantity of secale, whilst one independent of pregnancy, with but little innervation for a contrac-

tion, one that perhaps contains but few muscular fibres to come into action, will respond to perhaps double or treble the amount.

The power of the secale in setting up uterine contractions has prevented its employment during pregnancy, and even during labor before the expulsion of the after-birth. Many dread giving secale before the expulsion of the placenta. The assumption that ergot may cause retention of the placenta is incorrect.

As regards the use of ergot in the early months of pregnancy, the fear that it will interrupt a normal pregnancy and bring on abortion is not justifiable. After death of the foetus and its expulsion with retention of the placenta or membranes or fragments of the former, secale acts extraordinarily well, and sets up good contractions. With the foetus alive and the pregnancy going on, I have never seen separation of the ovum or expulsion; but, on the contrary, with even tolerably large doses I have observed that it did not take place.

Ergot does no harm with a living foetus, but rather good. When the administration of secale is prolonged it sometimes loses its effect. In such a case it must be left off for a time, and when begun with again it will act well. Small doses may be continued for long periods with a view of promoting development of the muscular tissues but it will do best outside the period when it is required to arrest hæmorrhage.

In all venous hæmorrhages, whether from prolonged flow with normal commencement on the 29th day, or whether the onset is before its time, the prescription of cotarnin is called for. The hydrochlorate of cotarnin is known under the name of stypticin; a later phthalate of cotarnin has been produced under the name styptol. But stypticin even is not a specific against bleeding, any more than ergot; with the proper use of the one or the other, however, satisfactory results will be obtained.

It has not the property of exciting contractions of muscles, neither those of the smooth fibres of the uterus nor those of the blood vessels, but it may often enough come into use in the arrest of venous hæmorrhage through its action in relaxing muscles, where ergot causes compression by contraction of the walls of the veins, but does not at the same time have a similar effect on the arteries. In this way it is also indicated in arteriosclerosis and in certain cases of chronic metritis. Stypticin and styptol, by their action in relaxing muscular fibres, allow the blood to escape from the veins, and in this way act as hæmostatics. In general diseases, too, they frequently have an excellent effect in relieving venous stasis of the whole system, in disease of the heart, emphysema, and in disease of the liver. Stypticin proves itself especially useful when given

in time before an expected period (four or five days—five tablets of 0.05 gm. each.) It is given again before the next period, and so on until the menstruation is forced back to its proper term. If in disease of the heart menstruation is excessive, stypticin or styptol may be given *per os*, more actively subcutaneously or into the muscles. The hæmorrhage that results from venous stasis brought about by retroflexion of the uterus, and that is not arrested by ordinary means, calls for cotarnin, which will be found to be useful so long as no growths have taken place on the mucous membrane from long persistence of congestion. The same may be said in regard to blocking of vessels from disease of the adnexa, of parametritic indurations.

The causal factors of uterine hæmorrhages cannot always be singled out. If, on making a digital examination, no pressure from a hæmatocele can be felt either encircling the uterus or lying to one side, we shall try to treat the bleeding from the mucosa itself. This leads us to the third of the recognized hæmostatic remedies: Hydrastis Canadensis.

If we have not to deal with hæmorrhage arising from relaxed uterine walls, if we also find no changes about the genitalia that point to venous congestion, then hydrastis is in place.

As it has a very bad taste, the extractum hydrastis should be given in the case of young girls in hot spiced or some strongly flavored wine as a corrigens. Only a small quantity of Port or Greek wine will be required. If the hæmorrhage has been so far mastered that the limit is better defined, that the intervals are at least a fortnight, and that the period does not commence more than from three to eight days before its time, the extract may be exchanged for hydrastinine, to be given about five days before the expected anticipated onset. Stypticin also is helpful in such cases, and should be given a trial, when there is reason to suspect congestion in girls. If in such cases ergot is given during the periods, in the course of four, five, or six months, in young girls, a timely commencement and cessation of the periods may be looked for.

The giving of iron preparations to young anæmic girls when the menses are at the same time too profuse or too prolonged is to be avoided. Such hæmorrhages are frequent in anæmias. If there is chlorosis along with the anæmia, iron may be in place. The amenorrhœa itself as such is not to be treated in anæmic conditions. If iron is given to chlorotics with amenorrhœa, but little result will be obtained; usually the hæmorrhage will be more profuse every three weeks than when all treatment is suspended in the intervals. I have never seen increase of the hæmorrhage with arsenic; it may, therefore, be combined with

hydrastinine in the treatment. When we have succeeded in bringing the menses to their normal condition, and they continue in that state without the hydrastis, the arsenic may be replaced by iron, or arsenical water may be given at the commencement.

Only too often the practitioner loses patience and falls back on the conclusion that the internal remedies are exhausted—sends his patient to a gynæcologist with a view of scraping or something. The latter may also have imbibed the erroneous notion that medicines have left the patient in the lurch and proceed to operation prematurely, which might have been avoided if a suitable remedy had been made proper use of in a suitable case.

We should never lose sight of the principle that operations should be performed only when all other means fail.—*The Canadian Practitioner & Review.*

Vomiting of Pregnancy.

Treatment: Dried thyroid substance used in five cases with prompt and lasting benefit. Best results obtained by definite mode of administration: Patient awakened at 5 A. M., for first dose; repeated at 9 A. M., after breakfast in bed, and again half-hour before dinner and supper and before retiring. Morning dose not to be less than 0.3 gm. (5 grains) 0.45 or 6. gm. sometimes advisable. Exact dosage determined by observation. If vomiting is most severe in other than morning hours, the large doses are to be given at this period. Food to be taken only in small amount at a time; meat interdicted.—*The P. M.*

OPHTHALMOLOGY.

The Abortive Treatment of Early Cataract.

Louis Dor has modified Badal's Potassium Iodide (3 per cent.) treatment, and after three years writes that he can speak of cure in some cases, improvement in the majority, the maintenance *in statu quo* of others, and failure in very few. He considers cataract the result of ferment action on the lens, and has experimented largely to find the best means of destroying the action of the ferment. The solution which gave the best results is the following:—Sodium Iodide 5, Calcium Chloride 5, Distilled Water 400. With this one can arrest eight cataracts out of ten; cure one of them, and fail only in one. When he speaks of "cure," he alludes only to very early cataracts with vision still equal to $\frac{1}{2}$; after two months' treatment the vision is restored

to 1. Most patients come when their vision is less than $\frac{1}{2}$; these recover to a vision of $\frac{1}{2}$; in other cases the vision remains stationary. He has treated altogether 50 cases. Five were cured and have ceased treatment for two years, enjoying normal vision. About 40 came back from time to time, and nearly all say their vision is improved. The solution should be applied to the eyes by means of an eye-bath for half-an-hour daily for each eye. The treatment should persist for three to six months. —*The Australasian Medical Gazette.*

Sudden blindness in one eye.

H. L. EASON, M.D., M. S.—A lesion of the optic tract above the chiasma does not cause blindness in one eye, but blindness on one side of the field in each eye—hemianopia. Blindness in one eye, therefore, must be due to a lesion peripheral to the optic, chiasma, *i.e.*, affecting the eye itself or the optic nerve.

Glaucoma.—There is only one common inflammatory cause of sudden blindness in one eye—glaucoma. It is the only painful inflammatory ocular affection which will reduce vision from ordinary sight one day to total blindness the next.

In the following conditions blindness may occur within the space of half an hour to an hour, or even more rapidly.

Vitreous Hæmorrhage.—As in arterial and renal disease cerebral hæmorrhage may suddenly occur, so may hæmorrhage into the vitreous. In so-called albuminuric retinitis may be seen more or less obvious changes in the arteries—irregularity in calibre, alteration in appearance, and tortuosity—associated with numerous small flame-shaped or petechial retinal hæmorrhages, and white spots arranged in radiating lines around the macula itself. But in some cases of vascular disease a much more pronounced hæmorrhage may occur; instead of the hæmorrhage being a small one of flame shape in the retina itself, it may be so large that the whole interior of the eye is filled with blood. Hæmorrhages of this character may also result from wounds or injuries of the ciliary body, or of the choroid. The choroid is extremely vascular, and any punctured wound of the eye-ball is likely to lead to a profuse intra-ocular hæmorrhage. Another condition which may cause profuse intra-ocular hæmorrhage is again glaucoma; and not from an inflammatory cause, but as the sequel of an operation for the relief of tension. In glaucoma when the eye is hard the intra-ocular circulation ceases, because the intra-ocular tension is higher than the arterial pressure. The operation of iridectomy necessitates letting out all the aqueous. From being hard the eye suddenly becomes flabby. The sudden fall of

the intra-ocular tension causes a rupture of one of the choroidal vessels, usually a choroidal vein, and there may be intra-ocular hæmorrhage, often so severe that the whole contents of the eye are extruded through the iridectomy incision.

In vitreous hæmorrhage there is no perception of light, though on external examination the eye is apparently normal. But, as in every case of blindness in one eye, the direct light reflex on that side will be found abolished. Ophthalmoscopically, there is nothing to be seen, for though the pupil is dilated, when you look into the eye it appears black. This distinguishes a vitreous hæmorrhage from every other ophthalmic condition. If there is cataract you can see it; if there is a detachment of retina, optic atrophy, or glaucoma, you can see inside the eye, and you get more or less of the red fundus reflex. The blindness may be extremely sudden, and in severe cases the prognosis as to sight is very bad. Slight hæmorrhages, as a rule, clear up, but there being no vessels in the vitreous, and only a lymphatic circulation, absorption is very slow.

Detachment of the Retina.—The retina may be detached from various causes, such as a growth pushing it away from the subjacent choroid, high myopia, or dropsy in renal disease. Directly the retina strips away from the pigment epithelial layer, which usually remains attached to the choroid, sight over that area is lost, for practical purposes, though there may be a certain dim perception of light. A retina may remain detached for 3 or 4 years or longer, and if from any cause it returns to its original position, vision is instantly restored to its original acuity. But spontaneous recovery from detachment of retina is rare. A patient who had detachment of the retina went to sleep one day after lunch, and when she awoke she found her sight was as good as ever, though for 7 years she had seen nothing with that eye. The retina had gone back. The pigment epithelium of the retina must play a very important part in vision, for the loss of sight in detachment of the retina cannot be due to disturbance of circulation. If it were, sight would not be restored after a long term of detachment; it must depend on the association of the retina with the pigment layer. In order to produce total blindness in one eye detachment of the retina must be complete.

Embolism of the Central Artery of the Retina.—One of the commonest of the causes of instantaneous and permanent blindness in one eye is embolism of the central artery of the retina. The fundus shows a characteristic appearance. The arteries being emptied of blood, are

extremely minute and often hardly visible. After a day or two the outline of the disc begins to get hazy, and may become white and atrophic. The retina no longer appears transparent, but becomes grey, resembling the grey of detachment of retina. The greyiness is universal, except at the yellow spot. That escapes because it is attached firmly to the choroid and so gets some choroidal subjacent colour, which is very distinct in contrast with the surrounding pallor. Other arteries go to the eye besides the arteria centralis retinæ. These are responsible for the choroidal, ciliary, and iridic circulation, and it occasionally happens that an aberrant ciliary artery pierces the sclerotic in the region of the disc and supplies a certain amount of retina between the disc and the yellow spot. In this case embolism of the central artery does not cause total blindness. There is a small area of vision in the centre of the visual field corresponding to the area of retina supplied by the cilio-retinal artery. After some weeks the circulation often seems to be somewhat restored, especially in the veins, where the blood column breaks up into sections, giving a dotted appearance, but the circulation is never established sufficiently for the return of useful sight.

Thrombosis of the Central Vein.—The ophthalmoscopic appearances are widely different from embolism of the central artery. The arterial circulation is good, but the venous return is obstructed. The fundus looks like a Catherine wheel, for all over there are splashes of minute retinal hæmorrhages. The disc is one large pink blur, and emerging from this are seen dilated, tortuous retinal veins. Later some venous circulation may be re-established, but more than half the cases end in blindness from acute glaucoma.

We have now to consider the causes outside the eye which affect the optic nerve. The common ones are only two—injuries of the optic nerve and retrobulbar neuritis.

Injuries to the Optic Nerve.—A man, aged 27, was seen. Four days previously he had been practising bayonet exercises with old French rifles, the bayonets being without tips. He was struck just below his eye at the outer margin of the orbit. There was nothing to be seen except a small punctured wound scarcely more than a quarter of an inch across, which it seemed would hardly admit the point of the bayonet. There was no ecchymosis, and the eye was absolutely uninjured; but from the moment of the accident it became absolutely blind. The bayonet had cut the optic nerve right across. There was no atrophy of the optic disc. A commoner cause of loss of vision in one

eye is a fractured base, with crushing of the optic nerve in the optic foramen.

Retro-bulbar neuritis usually occurs in young persons, more commonly women, in whom, from no apparent cause, complete and sudden loss of vision occurs in one eye, rarely in both. This loss persists for a week or fortnight, but there is nothing to be seen in the fundus. As vision begins to return, the disc may show more or less optic neuritis. In the majority of cases, the vision returns to almost normal; if there is any permanent defect it is usually a central scotoma. The cause of this comparatively constant symptom has never yet been explained. It is probably due to the fact that the optic nerve derives its vascular supply from the pia mater of the sheath, and in any inflammatory affection of the nerve the central fibres suffer most from deprivation of the ordinary circulation. The causes of this condition are very obscure. The following case shows the occurrence of these attacks alternately on the two sides.

A girl, aged 22, suddenly lost the sight in the right eye 5 years ago. She did not seek advice, and vision slowly improved. When seen in June, she had had pains in the head for 2 days on the left side, and, while sitting at breakfast one morning, what she described as a flash of lightning came across her eyes, and sight failed entirely. On examination, she had vision in the right eyes not quite normal, and the disc was rather pale. She used the eye, and found it efficient for all purposes. The left eye was just beginning to get vision back, for she could count fingers at the lower part of the field, but could not see even a bright light in the other part. The disc was pale and the veins were pulsating. The eye was tender to the touch and there was supraorbital tenderness. Mr. Steward and the writer thought they felt a small mass on the inner side of the orbit. They had been looking out for dilatation of the accessory sinuses of the nose as a cause of monocular blindness of this sort, and thought this might be a case. Mr. Steward explored the inner side of the orbit, but found nothing abnormal. He removed a portion of the middle turbinal and passed a probe into the sphenoidal sinus, but found nothing abnormal there. Whether *post* or *propter*, within 2 days vision improved enormously. All that remained was some pallor of the disc and central weakness of vision for the colours red and green. On July 17 she suddenly lost the sight of the right eye again completely. When seen, vision was returning slowly. She could see light straight in front. The disc was pale, but there was not much else to be seen. Vision returned to practically normal. The field of vision was very restricted, in an irregular manner, and although she

had not got an absolutely central scotoma, she still had one near the centre. There was no organic disease to account for the retro-bulbar neuritis. The sex, age, suddenness of the onset, recovery in each case, and central scotoma were all characteristic.

Migraine.—The ordinary symptoms of migraine are partial loss of sight, often homonymous hemiopia, or a central scotoma, in which a boiling, flashing, white area is seen in the central part of the visual field surrounded by zig-zag lines, the so-called "fortification figures," followed by severe headache. But there may be not infrequently sudden blindness in only one eye. The following description was given by a patient who occasionally went blind in one eye with bilious headache. "At supper, my right eye seemed to a little misty. I shut the other eye, and observed that the blindness seemed to come over the whole of the eye, not gradually, and not starting from either side or the top, but all over the eye. The left eye was not affected in any way, and I did not have any headache or after-effect."

Mr. Higgins, in the case of a Guy's student who had frequent attacks of monocular migraine, found during one of those attacks that the retina was pale and the arteries constricted.

Hysterical amaurosis follows the usual rule that hysterical lesions are one-sided. A woman complained of total blindness in one eye, for which no cause could be discovered. On applying the usual tests for malingering, it was found that, as is the rule, she could see with that eye when she had both eyes open, but when the other was shut she said she could see nothing.—*The Medical Review*.

Cases and Comments.

Ipecacuanha in Liver Abscess.

BY

GEORGE STEPHANOS, B. A., M. B. & C. M., *Assistant Surgeon*.

Thoma, a Roman Catholic Christian, aged 20, was admitted for a painful swelling in the right hypochondrium reaching down to the level of the navel with a history of four months' duration. He had still evening rise of temperature 103° F.

On exploration, liver-pus was detected.

On the 13th July, 1911, about a pound of characteristic liver-pus was evacuated by a free incision. A drainage tube eight inches long was introduced. He was given internally, morning and evening—

Ipecac powder .. grs. 20
Acid Tannic .. grs. 10
Calomel .. gr. 1
Misce one powder.

He had no rise of temperature since the operation. On the fifteenth day after the operation the patient was discharged cured. The drainage tube which had to be shortened frequently was in position till four days before he was discharged.

Healing up of such a large abscess cavity in the liver in, as I venture to consider, so short a time is attributable to the administration of Ipecac internally as advised in a recent issue of the *Antiseptic*.

Another noteworthy fact was the absence of vomiting till towards the end when it was considered time to discontinue the Ipecac.

This effect was evidently due to the combination of Acid Tannic.

In a case of Dysentery where Ipecac was exhibited, I found Acid Tannic to prevent vomiting.

I think it is reasonable to consider that in abscess of the liver as well as in dysentery the specific effect of Ipecac is due to its action on the *Amæba Coli*.

Those who have been able to try this method of treatment in abscess of the liver with or without operation will oblige the Profession by publishing their experience in the *Antiseptic*.

THE ANTISEPTIC.

AUGUST, 1911.



Mr. Gokhale's Bill and Sanitation.

FROM a variety of causes sanitary measures, though carefully devised, have not been fruitful of satisfactory results in any Province of India. The Government have, from time to time, been strengthening the Sanitary Department. There is an Imperial Sanitary Commissioner who has to keep the Government of India informed of the general sanitary needs of the country; and every Local Government has a Sanitary Department presided over by a Sanitary Officer. Local bodies and Municipalities are charged with the special duty of looking after the sanitation of the localities under them. And yet it must be admitted that the progress has been very slow. Defective organisation, the large population to be dealt with, the extent of the areas to be brought under the direct influence of the active sanitarian, and the general lack of funds have been among the obstacles to the spread of healthy ideas about sanitation. But improvements in these various directions will but poorly be reflected on the sanitary condition of the country if the minds of the people are not prepared to receive the ideas sought to be instilled into them. No amount of lecturing, no pamphlets, leaflets, not all the arts of persuasion could induce the people to improve their habits and their environments with a view, in a corresponding degree, to improve public health and reduce mortality, if they continue, as they are now, to be woefully ignorant and illiterate. Ignorance, illiteracy and poverty combined, have produced evils, the removal or the mitigation of which must be the work alike of the Government and the leaders of the people. In no other civilized country in the world has the death-rate been higher, or the rate of increase of population lower.

There has been, for a long time past, a marked tendency for the people to migrate to cities and towns; and in times to come, with the growth of industries and of commerce, offering employment, on better wages, on the one hand, and poverty and squalor on the other, this tendency will be still more marked. With the concentration of

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population in particular localities and with the congestion which it implies, the problem of sanitation will demand the attention of all classes of people. In nearly every part of India diseases which take an epidemic turn are common enough. Malaria, plague, cholera, small-pox and a number of other maladies, either directly resulting from, or due indirectly to the crowded and insanitary state of cities and towns, have been playing havoc. If a new disease finds a foot-hold in the land, it never disappears altogether. Far from disappearing, the infection spreads, and even rural areas which are sparsely populated, become speedily affected. So far, the efforts made to extirpate the germs of epidemic diseases have produced no corresponding result; and so long as the old conditions continue there can possibly be no material improvement in the situation. Facilities of locomotion, the constant movement of population, the increasing complexity of life and organisation which the struggle for existence demands—all call for instant and effective action in the matter. The time has come when the people must be induced to change their habits and customs and adapt themselves to the new conditions.

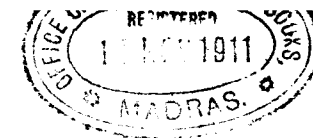
Experience has shown that education has been the chief factor in the progress of civilisation, and there can be no progress worth the name if the people are of low vitality, sickly, or liable easily to fall victims to various kinds of diseases. It is also a fact that the power to resist and repel the attacks of diseases may be acquired, among other things, by means of preventive measures. The sanitarian will be able to tell us that among the educated classes in this country his work has been comparatively easy. But among the ignorant masses sanitary measures, however vigorously prosecuted, have produced no proportionate good. Ideas cannot take effect and fructify on barren and inhospitable soil. The ground must be prepared for their reception. If, therefore, sanitary measures should succeed, the masses should be educated. The gloom of ignorance must be dissolved by well-meant educational efforts. What, however, the bulk of the people of India stand in need of is not high education or specialised knowledge such as is imparted by our Universities, but a training in the rudiments of knowledge such as will stimulate their intelligence, broaden their vision and liberalise their understanding. If you offer them facilities to develop their common sense and grasp common ideas about their own well-being, you have done a great deal to enable them to help themselves. The spirit of self-help is there already, but it gropes in the dark for want of guidance. The extension of elementary education will supply that guidance. It will enable the masses to profit by the instruction

given. Lectures, pamphlets, leaflets and other educational agencies will not then be in vain. In such circumstances the demand will be for more accurate and correct information on matters connected with the daily life, habits, mode of living and occupations of the people. In India, till now, seven out of eight children have been allowed to grow up in ignorance, so much so that sometimes even in a whole village you will not find a single man who has received even the elements of knowledge. Past history and present practice show that unless elementary education is made free and, wherever possible, compulsory, the people will not make any move onward. Leading Indians like the Hon'ble Mr. Gokhale and prominent Native States like Baroda have long realised this. Mr. Gokhale's Elementary Education Bill, now in the Imperial Legislative Council, embodies the national sentiment and opinion on the subject. It is, of course, a modest attempt. But it will foster the growth of elementary education in this country, the effect of which will be both beneficial and far-reaching. In no respect will that Bill, if passed into law, conduce to more solid and perceptible good than as a means towards the improvement of Indian sanitation. We have the testimony of almost every responsible local body in the country that no sanitary work could be pushed forward amidst an ignorant population; and very many Municipalities have already passed resolutions according their cordial and ungrudging support to Mr. Gokhale's Bill. The Madras Corporation has not only formally supported the Bill but has given publicity to its conviction in its annual report, that the extension of elementary education is a condition essential to the improvement of the sanitation of the city of Madras. In Bombay, the Corporation has come almost to the same conclusion; and steps are being taken to establish an extensive network of elementary schools in that city, in which the children of the poor especially may receive their education free. In Calcutta too, organised efforts are being made towards the same end, so that there seems to be no difference of opinion among the public and the representative local bodies as to what should be done in the matter. Under these circumstances we hope that Mr. Gokhale's Bill will be passed into law as the first operative step towards ensuring the progress of India in all healthy directions.

Preparations, Inventions, Etc.

'*Tabloid*,' '*Xaxa*' and *Caffeine*.—"Tabloid" '*Xaxa*' and Caffeine is issued by Burroughs Wellcome & Co., containing 4 grains of '*Xaxa*' (Acetyl-Salicylic Acid) and 1 grain of Caffeine. It combines the specific antipyretic and analgesic action of '*Xaxa*' with the stimulant effect of caffeine on the circulation. It should, therefore, be of value in cases of pyrexia where the heart's action is weak. The diuretic action of the caffeine is also useful in febrile conditions. The dose is from one to five twice or thrice daily.

'*Tabloid*,' '*Xaxa*' and Caffeine is supplied in bottles of 25 and 100.



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Original Articles.

• DISEASED TONSILS, AND THEIR REMOVAL BY THE GUILLOTINE.

BY

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ALTHOUGH the use of the faucial tonsil is by no means agreed upon, there is no doubt that it is frequently a very potent source of trouble. Whether this mass of lymphoid tissue, situated at the entrance to the pharynx is of great functional importance in man; or, whether its uses were confined to previous ancestors, its removal, so far as is known, causes no important alteration in the bodily economy. Its function seems to be protective, and corresponds to the lymphoid tissue in some fishes, which produces leucocytes to wander over the gills and remove organisms. However this may be, the tonsil like the appendix is itself readily infected and may cause much acute and chronic illness. The lymphoid tissue contains numerous tubes or lacunæ, which extend from the surface through the entire thickness of the organ as far as the capsule. The tonsil has two surfaces. The free surface, covered by the mucous membrane of the pharynx, faces its fellow of the opposite side and has the orifices of the lacunæ. The other surface, which is usually of larger extent is embedded in the pharyngeal wall between the faucial pillars. It is covered by a definite fibrous tissue capsule which is connected to the pharyngeal aponeurosis by loose areolar tissue, which allows it to move in all directions and will allow of considerable separation, such as occurs during enucleation of the tonsil with the

• Specially contributed to *The Antiseptic*.

guillotine or by a collection of pus in peri-tonsillar abscess. The size of the tonsil varies considerably, but the normal organ does not project from beyond the faucial pillars. The tonsillar tissue consists essentially of two masses, anterior and posterior, and in some cases a central or third mass is present, each having the form of a longitudinal ridge. In overgrowth, one or more portion may hypertrophy, and in some cases it is almost impossible to say which has had the excessive growth as the tonsil appears as a single mass without division.

During hypertrophy the new tissue may remain embedded—hidden behind the anterior faucial pillar—and such a tonsil may be as large as the end of the thumb without projecting. In others the overgrowth projects beyond the pillar and is readily visible; this as a rule tends to hang down towards the base of the tongue. In a further class of case the major portion of the tonsil projects into the isthmus of the fauces so that there remains only a narrow chink between those of the two sides. The size of the projecting portion is no criterion of the size of the tonsil as a whole; indeed it is usually the case that more tonsil is hidden than is seen. The commonest type of tonsil is that composed of a hypertrophy of the anterior mass, part of which projects beyond the faucial pillar, and its lower part is prolonged down as a tongue like process. The tonsil like the rest of the lymphoid tissue of the body tends to atrophy with increase of age; in those which are diseased, however, this process is retarded, for a tonsil once diseased practically always remains so. Connecting the upper portion of the two faucial pillars is a fold of mucous membrane, which, with the upper part of the tonsil forms the boundaries of a cavity—the supra-tonsillar fossa which is often the seat of infection. In embedded tonsils, especially those composed of anterior and posterior masses, this fossa is continuous with a deep cleft in the tonsil itself. Some tonsils are small and flattened in shape. Tonsillar enlargement may arise from local or general causes. In general hypertrophy of the lymphoid tissue of the body the tonsil participates in this increase and simply forms part of a general condition. The chief cause, however, of local hypertrophy is infection. The association of hypertrophied tonsils with adenoid vegetations is a very frequent one and the vicious circle is established, the mouth and throat become the filter for organisms on account of continuous mouth breathing. It seems probable that carious teeth may cause the tonsils to enlarge independent of the presence of adenoids, and this enlargement may subside after the teeth have been removed or further infection prevented by some form of filling. The tonsils may be acutely inflamed forming part of a general pharyngitis, this is a superficial form and readily subsides. Acute inflam-

ation may affect the tonsil primarily and chiefly, as in the follicular form, where the lacunæ are filled with caseous plugs or purulent material. After one attack of acute inflammation, especially where the lacunæ are infected, the tonsils are specially prone to further attacks, and the patient has frequently attacks of tonsillitis on the least provocation. These attacks are often sharp, commencing with a rigor and having a temperature of 102 or 103 degrees and lasting 3 or 4 days. In some cases such attacks will go through a whole household, especially where several members of it are subjects of hypertrophied tonsils. In addition to these recurrent sore throats, when the lacunæ contain pyogenic organisms some lowering of the general resistance may allow the organisms to pass through the capsule and infect the peri-tonsillar tissue, causing suppuration and peri-tonsillar abscess. A similar infection may occur from the tonsillar fossa which closely resembles a lacuna in this respect. The lacunæ in virtue of their shape are not readily emptied of their contents. Here organisms, epithelial debris and food particles become lodged, giving rise to white pellets which have a foul odour of decomposition. When one of these plugs comes near the surface of the tonsil the patient is conscious, each time he swallows, of a bad taste in the back of the mouth. In addition to this these caseous plugs cause a characteristic form of foul breath.

The presence of enlarged tonsils causes some difficulty in swallowing, and articulation is interfered with, the speech having a characteristic quality. The results of enlarged tonsils are not limited locally; they may serve as the focus of infection for the cervical glands, and should be carefully examined in all cases of tubercular adenitis. The infected tonsil often takes a share in forming part of a general oral sepsis with its injurious effects on the gastro-intestinal tract. The association of sore throats to rheumatism has long been known, and many consider that the sore throats are the result of a rheumatic tendency. It is more probable, however, that the tonsil is the infective focus and the point where the rheumatic organism gains entrance to the body. Acute rheumatism is frequently preceded by a tonsillitis. In the more chronic forms of rheumatism the tonsil is often diseased and its removal prevents further attacks of neuritis or other form of the rheumatic manifestation. Chorea which is so closely associated to rheumatism and is considered as one of its forms is not infrequently associated with hypertrophied tonsils and adenoids. The removal of tonsils and adenoids has frequently cured cases of chorea, by supposedly removing a source of reflex irritation; this is probably an incorrect reason, the true being, that the source of the rheumatic organism is removed. The diplococcus

rheumaticus has been cultivated from the tonsils which have been removed from cases of chorea. In order to fully examine for diseased tonsils, the throat must be carefully inspected; the projecting tonsil is readily seen, but even in these cases a larger portion is often hidden from view. This portion may be seen by making the patient retch, when the tonsil is projected further from between the pillars of the fauces. In other cases no projection may be seen although the tonsil is much enlarged; these can generally be brought into view when the patient retches. Still further although the tonsil may not be enlarged and may not be visible by either of the above methods of examination, it may be grossly diseased and septic. This condition is only discoverable by drawing aside the anterior faucial pillar by means of a blunt hook. It is important to recognise that this small and septic tonsil often causes more mischief than one which is enlarged though not so grossly septic. Whichever form the diseased tonsil assumes, whether large or small, its only rational treatment is removal, and that completely. Tonsillotomy or incomplete removal is often unsatisfactory owing to a persistence of the septic focus, or a continued growth owing to the presence of organisms in the remaining portion of the lacunæ. When in hypertrophied tonsils the projecting portion is cut away, often the most offending portion is left behind—the septic bases of the lacunæ and these may give rise to all the symptoms of the original condition, so that the patient receives little or no benefit from the operation. Of the various methods of removing the tonsil the most important is some form of enucleation. Although the tonsil may occasionally be enucleated with the guillotine, by using it in the usual manner, combined with pressure below the angles of the jaw, yet this is the exception rather than the rule, and applies only to tonsils that are considerably enlarged. To remove embedded, small, or flat tonsils the guillotine was quite inadequate. The only advantage of the guillotine so used, was the simplicity of the method and the rapidity with which it could be performed, usually under nitrous oxide or other short anæsthesia. Since it was recognised that the whole tonsil should be removed, various methods of enucleation have been devised and also numerous instruments for its performance. The best of these consists in giving chloroform till deep anæsthesia is obtained and which may be maintained by means of the Junker's inhaler. The tongue being drawn forwards the tonsil is seized with Volsellum forceps and pulled toward the middle line, with a pair of fine dissecting forceps the capsule is exposed by tearing through the anterior pillar and the tonsil separated from the pharynx by blunt dissection, the lower attachments are finally cut through by means of scissors. This operation in skilful

hands gives excellent results. Its disadvantages, however, are that a deep anæsthesia is required which may require to be repeated if the operation is prolonged. It is at first somewhat difficult to reach the capsule and considerable trauma may be suffered by the faucial pillars and palate. A rapid and easy method of tonsil enucleation was an operation much sought after. Such a method was described in the *Lancet* of September the 17th, 1910. By this means tonsil may be totally removed by the guillotine in 95 % of cases, in 44 % of which the organ is shelled out complete in its capsule in one piece. The results mentioned in the above article have now been much improved on, so that in a more recent series of 100 cases, 74 % of tonsils were removed complete in their capsule in one piece, by means of the guillotine under ethyl chloride anæsthesia. In the remaining cases the tonsil was removed in two or more pieces, but by the method described it is possible to take away the very last particle of tonsillar tissue or capsule. The technique of the operation for enucleating the tonsil with the guillotine is as follows. The patient lies in the supine position with the head on the same level as the trunk. The mouth is opened by a gag placed on the left side of the mouth, before the anæsthetic, when ethyl chloride is given, or after when chloroform is given. The operator stands on the right side of the patient and faces the head, which is turned on to its right side so that the right tonsil lies below the left. The guillotine of the McKenzie pattern which should have a ring of sufficient size to allow the tonsil to be pushed completely through it, and should not have too sharp a blade, is held in the right hand. It is inserted from the left side of the mouth so that the shaft overlies the angle of the mouth on the left side. The blade surface of the guillotine is passed behind and under the tonsil, pushing it forwards, the hand being depressed near the left cheek. The tonsil is then pushed into the ring of the guillotine by means of the index finger or thumb of the left hand pressing on the outer part of the anterior pillar of the fauces. When the tonsil is felt to slip through the ring, the blade of the guillotine is driven home by means of the thumb, thus cutting the connection of the tonsil to the pharyngeal wall. The hand is now pronated so that the tonsil is lifted out of the mouth on the under surface of the guillotine which is now uppermost. The left tonsil is now removed by a similar manoeuvre. The head is turned back to its supine position; the operator still standing on the right side faces the patient's left side and introduces the guillotine from the right side of the mouth and with the left forefinger presses the tonsil into the ring of the guillotine the left arm being brought over the patient's head for the purpose. Should the tonsil be

too large to enter the ring of the guillotine a portion may be removed and then with a further application of the guillotine the remainder of the tonsil can be pushed into the ring and removed. In cases where the main portion of the tonsil is removed but a piece of capsule with some tonsillar tissue is left behind, this may be removed with certainty by a second application of the guillotine. In some cases where there has been considerable inflammation outside the capsule, and this is densely adherent, the tonsillar tissue may be shaved from the capsule.

This operation gives most satisfactory results and no recurrence is possible so long as no tonsillar tissue remains. This method of removal by the guillotine is entirely satisfactory as judged by the after results. There is a minimum amount of trauma, hæmorrhage is not excessive and the method is rapid. On the 27th of August 1910 I operated on 9 cases of tonsils and adenoids under the anæsthesia produced by ethyl chloride, the total time being 30 minutes. Of the 18 tonsils removed 2 were incomplete, they had not quite all the capsule although 80 % of the tonsillar tissue was removed. The anæsthesia in this case was not satisfactory, here the movement of the tongue and faucial pillars made it impossible to completely push the tonsil through the guillotine ring. Of the other 16 tonsils 14 were enucleated complete in their capsules in one piece, the remaining 2 were each removed in two pieces, which when fitted together made two complete tonsils. The size varied, 4 were considered large, 2 medium in size, 2 were quite small and 1 pair were small and flat, being little more than 1/8 inch in thickness. The advantages claimed for this method of dealing with the tonsil are as follows—

1. It is rapid.
2. It is carried out under direct vision.
3. A short deep anæsthesia is necessary, such as may be given by ethyl chloride.
4. The pressure necessary to force the tonsil into the ring of the guillotine varies greatly, but can be regulated exactly by the finger on the pillar of the fauces.
5. The hæmorrhage is not more excessive, than that following other methods.
6. Cases have been operated on at ages varying from a few months to 25 years.
7. The after results are most satisfactory.

SOME REMARKS ON THE OPERATION FOR REMOVAL OF THE BREAST AND ITS LYMPHATIC AREA IN MALIGNANT DISEASE.

BY

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During the past two or three years there has been evolved an entirely new idea as to the method of spread of carcinoma. It was formerly known that, given a focus of cancer, sooner or later secondary deposits were found in the lymphatic glands draining the area in which the cancerous growth was situated. It was supposed that emboli consisting of cancer cells were carried along the lymph channels and, coming to rest in a lymphatic gland, a fresh focus of growth commenced there. In such a condition as carcinoma of the breast, in which the surgeon had good access to the growth and its secondary deposits, it was only to be expected that, if operation for cancer were to be successful, it should be so in such a situation. In abdominal cancer where the anatomical conditions are such as to make it extremely difficult, if not impossible, for the most skilled amongst us to perform anything approaching a radical operation with a removal of the entire lymphatic area, it could hardly be hoped that "recurrences" should be other than frequent; but after amputation of a cancerous breast and a free removal of the drainage-area, it was not unreasonable to think that here one should have a "cure" resulting. Two schools of thought were at work and two methods of performing a radical breast operation resulted. The first, basing its theory on the idea that there was a fine, branching lymph plexus in the actual skin, laid down the principle that a large area of skin should be removed so as to remove the plexus contained in it. A distinguished continental anatomist had described such a plexus and at that time no one took the trouble to confirm or deny his statements. Halsted, acting on the skin plexus theory, formerly advocated the removal of large skin areas surrounding the growth and practised such a method in his very extensive work. After such an operation it was impossible to bring the skin edges together and healing by first intention was therefore out of the question. A prolonged convalescence resulted and a great many cases had to be skin-grafted later. The other school of surgeons removed large skin areas and also large areas of subcutaneous tissues, equal in size to the skin area. Sir Watson

• Specially contributed to *The Antiseptic*.

Cheyne was perhaps the principal advocate in England of this procedure.

Mr. Sampson Handley, to whom most of our revised ideas concerning the spread of breast cancer are due, spent a very considerable time comparing the results of the two schools and he found that although what, for the sake of brevity, I will call the "Halsted" operation, necessitated the removal of more skin than the "Watson Cheyne" method, yet, after healing had taken place, there were many more skin-recurrences in the cases subjected to the former operation. Careful investigation, involving the cutting of countless microscopical sections of subcutaneous tissue, skin, secondary cancerous nodules, and lymphatic paths and of hours of patient work in following up the progressing growth, resulted in the statement that the secondary skin nodules resulted not from a spread along a skin plexus but along the lymphatics of the subcutaneous tissues and fasciæ and that lymphatic branches ran upwards from the subcutaneous tissues to the skin and so carried cancer-cells to be deposited in the skin and form a secondary nodule.

The skin-plexus of the distinguished anatomist was shown to be nothing but a myth and as its presence was never shown by microscopical examination it can only be supposed that it was an idea evolved not in the laboratory nor in the dissecting room but rather in the study chair.

The result of Mr. Handley's work is that in the removal of the breast for malignant disease it is not essential, nor even desirable, to remove a large skin area. The principles to be acted upon are:—

1. Remove an area of skin by an incision which includes a 5-inch circle taking the growth as its centre.
2. Remove the sub-cutaneous tissues and fasciæ very extensively—up to the mid-line of the body—as high as the first rib—down as far as the seventh costal cartilage.
3. Remove the axillary lymph tract and glands entire.
4. Remove the pectoralis major and minor, stripping them from the chest and working towards their insertion.

The area of subcutaneous tissue which lies over the seventh costal cartilage has been called the "dangerous area" because the lymph channels of that area communicate with the epigastric lymphatics of the abdominal cavity. Cancer-cells thus spread into the abdominal lymphatics and are free in the peritoneal cavity. They fall by gravity to the lowest point and become deposited on the ovaries. It is a well

recognised fact that a secondary deposit of carcinoma in the ovary, as a result of a primary growth in the breast, is found to commence on the outside of the ovary and spread inwards, the result of the cancer-cells first lying on the external surface of the ovary.

Mr. Handley based all his theory on the facts, proved microscopically, that cancer spreads by *direct growth* along the lymphatics and not by embolism. This method of spread Mr. Handley calls "*permeation*" and sections cut in series along an affected lymphatic shew the different stages; first, the cancer-cells pushing along the lymph channel, then a round-celled infiltration surrounding the cells, next an overgrowth of the cells causing them to be very tightly compressed and so destroyed, and lastly the lymph tract left as a fibrous band. The spread thus goes on and "permeates" the whole subcutaneous area working from the primary growth as its centre. Another striking fact which strongly supports the theory is brought to light by a careful investigation of the exact situation of secondary cancer deposits in the bones, as a result of a primary growth in the breast.

It is found that secondary deposits in the humerus occur at the point where the deep fascia meets the bone, that is to say at the insertion of the deltoid and not in the head of the bone. Thus one is shewn how the lymphatics drain along the subcutaneous and fascial structures and how necessary it is, therefore, to remove widely the fascial and subcutaneous tissues rather than the skin.

• SYPHILIS.

BY

J. BERNARD DAWSON, M.B., B.S., F.R.C.S.

(Continued from Page 443, Vol. VIII, No. 8.)

THE TREATMENT OF SYPHILIS.

CONGENITAL SYPHILIS.

Preventive Treatment—consists in actively treating the parents of a syphilitic infant in order that the second child may be free from the disease. Even if pregnancy has again supervened, vigorous treatment of the mother by inunction and calomel baths should be carried out, for favourable results have been recorded from this method.

Curative Treatment.—In treating congenital syphilis there are two points to be considered: the specific intoxication by the products of the syphilitic organism and the cachexia and malnutrition produced thereby.

• Specially contributed to *The Antiseptic*.

These two are correlated and interdependent inasmuch as the cachexia tends to improve as the infection is brought under treatment ; nevertheless it is an error to ignore the cachectic condition, for by general constitutional treatment this can be improved, so that the antisyphilitic remedies are augmented in their work.

The relative value of mercury and arsenical derivatives in the treatment of acquired syphilis has been much discussed during the past three years, but as far as congenital syphilis is concerned mercury stands pre-eminent and unassailed as the specific drug.

The administration of mercury in infants is a difficult matter and great care has to be exercised :—

The internal use of mercury.

Hydrargyrum cum Creta is the preparation most used and which is on the whole most effective.

During the first week of life one grain should be given night and morning; this dose is increased by $\frac{1}{4}$ of a grain every day until two grains are taken twice daily.

A little prepared chalk is usually added to prevent undue irritation of the intestine.

Sometimes gastro-intestinal disturbance occurs in spite of this; the mercurial must then be omitted for 3 days. If on recommencing the Grey Powder the diarrhoea or vomiting return, a change of drug must be tried. The solution of Mercury Perchloride may be given, infants standing 20 minims of the B.P. preparation twice daily. Eustace Smith recommends that this should be given in syrup.

Calomel in doses of $\frac{1}{4}$ grain twice or thrice a day is a valuable alternative, especially when vomiting is caused by other preparations.

The prolonged use of these drugs is very liable to cause severe and intractable intestinal trouble so that it is useful to be able to administer mercury by external means. Nevertheless gastro-intestinal derangements also occur when these methods are adopted.

Inunction with mercury ointment is a very valuable therapeutic measure, $\frac{1}{2}$ a drachm being rubbed into the back every day; the area of skin must be varied, otherwise an erythematous eruption may be caused. The existence of a rash or of pustular or ulcerative skin lesions may contraindicate inunction; then one of two methods must be adopted :—

1. A flannel binder smeared with 1 drachm of ointment is firmly applied to the abdomen and renewed daily. This obviates friction and may be used even when eruptions are present.

2. Mercurial baths containing 30 grains of Corrosive Sublimate should be given every other day. The amount of the salt should be increased by 15 grains up to 2 drachms per bath.

These may be continued as long as deemed advisable unless an erythema be produced by their use. In this case the strength should be reduced and the interval between the baths increased.

These several methods of treatment may be used separately or in combination and the exact *modus operandi* must be decided with due regard to each case. The more profound the cachexia and the more severe the interference with nutrition the greater the necessity of bringing the child rapidly under the influence of mercury.

There are certain ancillary factors in the successful treatment of congenital syphilis :—

1. CLEANLINESS.—Not only must the whole body be bathed every day but special attention is to be paid to the napkin area which must be kept dry and clean by constant attention. The mouth must be cleansed with Boracic Acid lotion after each feed.

2. WARMTH.—Moderately high temperatures have a most marked effect both on the disease itself and also on the action of the mercury given. The child should be kept in a temperature of at least 65° F and warmly clad in woollen clothing.

3. FRESH AIR.—As far as compatible with the previous statement the child must be kept in the open air. This not only improves the nutrition and augments the appetite, but it provides for thorough oxygenation of the blood—a process difficult owing to the anæmia which occurs.

4. DIET.—Breast feeding is by far the best, but unfortunately milk is usually scanty in these cases so that recourse to artificial feeding is inevitable. The use of cow's milk and water in proper proportions and with the addition of cream is usually an adequate diet. If there is much vomiting this mixture may be peptonised.

If malnutrition is marked, the addition of small quantities of Violetole to each feed is of great service.

Cod Liver Oil in doses of 10 drops 3 times a day is useful if it can be tolerated.

Mercurial treatment should not be continued too long, for the mercury produces a hæmolysis of the red blood corpuscles, and thereby an anæmia. As soon as the symptoms have disappeared the specific treatment should be stopped and tonics substituted.

Iodide of Iron is invaluable and may be given either as the syrup which is apt to cause fermentation or as a solution by combining Tartrate of Iron with Iodide of Potassium. The free use of cod liver oil, Virol and palatable preparations of hæmoglobin is also of service in combatting the residual anæmia and malnutrition.

ACQUIRED SYPHILIS.

The treatment of this consists of local and general, and the drugs employed are mercury and arsenic. The interest in the latter drug has been much increased during the past few years by the introduction of the arylarsonates. It is proposed to discuss first the mercurial treatment and then to review the claims of the arsenical compounds.

Local Treatment.

Treatment directed against the primary sore consists of ordinary antiseptic cleanliness combined with the use of mercurial ointments to prevent undue friction. Attempts to check the disease by cauterization or even excision of the sore are doomed to failure, for general infection has occurred before the chancre manifests itself.

Thorough inunction of the penis and prepuce with calomel ointment immediately after intercourse with a woman suspected or known to be syphilitic is a wise precaution, but it is impossible to say how far this is preventive since it is unknown if infection has occurred.

The General Treatment.

Oral administration of mercury usually takes the form of doses of Grey Powder beginning with a daily dose of 3 grains and working up to 9 or 12 grains.

This should be combined with 1 grain of Dover's Powder to inhibit the tendency to diarrhoea.

The Green Iodide of Mercury is also given in pills containing $\frac{1}{2}$ to 1 grain or the solution of Corrosive Sublimate may be given in a mixture. The use of the latter is certain to produce digestive disturbance if prolonged.

Inunction of mercurial ointment is often used and is very successful. The digestive system is less disturbed whilst the patient is rapidly brought under the influence of the drug.

Intra-muscular injections of a cream containing 10 grains of calomel or $\frac{1}{2}$ a grain of the Perchloride are sometimes used. This method has the objection that considerable pain may be produced at the site of injection, but it has the great advantage that the dose need only be given

once weekly. This plan is very useful in hospital, dispensary or work connected with His Majesty's Services, for the dose is administered by the physician himself and cannot be avoided by a stupid or unwilling patient.

Vapour baths are sometimes used and are especially useful when the cutaneous manifestations are extensive or severe. The patient sits naked on a cane seated stool and is covered with a blanket reaching from neck to floor. Thirty grains of calomel is sublimed on a water bath under the stool. The bath lasts 20 minutes and should not be given more than twice weekly. Internal administration is usually carried on at the same time. Apart from the administration of mercury, the patient's general health must be attended to and excesses in diet must be avoided. The food should be ample and nourishing, containing an abundance of butter, milk and cream. Eggs are very useful, given freely either raw or cooked. Tobacco should be interdicted in order to obviate throat troubles.

Alcohol should be taken sparingly and, if at all, in the shape of a daily moderate allowance of good Burgundy or Port.

The teeth must be attended to and the mouth put into as antiseptic condition as possible.

Care must be taken to prevent constipation and a morning saline taken if necessary.

The Length of Treatment.

The treatment of syphilis should be continued with but short, if any, intermissions for at least two years.

The mercury should be pushed until mild soreness of the gums occurs but salivation should be avoided.

This intensity of mercurialism should be maintained for 4 months, the following two months the dose may be reduced by one half unless active symptoms are present or appear.

During the last 6 months of the first year, one month upon full doses and one month upon half doses alternately should be the rule.

During the second year a dose of mercury which does not produce any toxic symptoms whatever should be given daily for 6 weeks out every two months, the intervening fortnight be a period of rest when no drugs are given.

It will be seen that mercury is stated to be the drug for syphilis irrespective of the stage of the disease. In the intermediate and tertiary stages, Iodide of Potassium is of great use but should always be combined

with mercury, for where there are syphilitic phenomena there are the specific organism which needs destruction by mercury.

THE ARSENICAL COMPOUNDS.

During the past few years the organic compounds of arsenic known as the arylarsonates have been much tried for the treatment of syphilis.

Typical of this group of drugs is the one prepared by Burroughs Wellcome under the name "Soamin." This is Sodium Para-amino-phenylarsonate and it is used as an injection in doses of from 1 to 10 grains.

Great variety of opinion exists as to the merits of these drugs, some syphilologists declaring strongly in their favour and quoting many a successful case whilst others are opposed to their use.

There have been a number of sad accidents following their use, such as arsenical poisoning and neuritis of different kinds including optic neuritis leading to blindness.

At the present state of our knowledge it is perhaps wiser for the profession as a whole to stick to mercury whose dangers they know rather than experiment with dangerous drugs they know not.

THE USE OF POTASSIUM IODIDE.

In the tertiary stage of syphilis this drug is invaluable for its marvellous power of causing the absorption of syphilitic granulomata.

The great point about its use is the administration of heroic doses. Beginning with 5 grains 3 times a day the dose should be rapidly increased up to 30 or 40 grains 3 times a day. Symptoms of Iodism are frequently met with and may need a temporary reduction or omission of the drug. If such symptoms appear from small doses they will often disappear if the dose is increased.

Iodide of Potassium is also liable to upset the stomach and cause depression so that it is usual to combine the drug with Carbonate of Ammonium or Sal Volatile. The drug acts more effectively if given in a large quantity of water and so diluted doses do not disagree so often.

Some preparation of Pepsin is also given with Iodide of Potassium to diminish the disturbance of the digestion.

There are numerous organic preparations of Iodine in the market which claim to be free from the disadvantages of the inorganic preparations, but in all probability nothing is so successful as the pharmacopoeal preparations.

Our Contemporaries. MEDICINE.

Vaccination—an Exploded Fad.

BY

MISS L. LOOT,

Secretary, National Anti-Vaccination League, London.

The statements made by Mr. S. K. Chowdhri in a recent issue of this review regarding vaccination, show that the writer has not studied the subject very closely. He begins by stating that vaccination has stood the test of a century and identified the practice of inoculation with Jenner's vaccination and goes on to state that in this way the practice of vaccination has stood the test of many centuries. Taking the point as to the identity of vaccination with small-pox inoculation, Jenner's original cow-pox was a totally different substance to the virus used in small-pox inoculation. Jenner called it small-pox of the cow, but Creighton's and Crookshank's researches have proved beyond any shadow of a doubt that it had no connection whatever with human small-pox, but was apparently allied to a far more terrible disease. We must therefore dismiss the old practice of small-pox inoculation from our minds when considering what vaccination has done and only regard the experience of the past 100 years. England and Wales form a country where vaccination has been as widely practised as anywhere in the world. The statistics, therefore, of this country are sufficient for our purpose, and if they show that Mr. Chowdhri's statement is incorrect, all reasonable men must agree that the anti-vaccinists are right in fighting for the repeal of the compulsory clauses of the Vaccination Acts all over the world. What then do the English figures show? Vaccination was introduced to the world by Jenner in 1798; in 1840 an Act was passed providing vaccination at the public cost for every one, and making small-pox inoculation a penal offence; in 1853 vaccination was made compulsory; and in 1857 a very stringent compulsory Act was passed. It was not until 1898 that the Vaccination Acts were made less stringent by the introduction of the conscience clause. Vaccination, therefore, has been practised in England since 1798, even the poor could undergo the operation since 1840, and since 1853 every person born has had to be vaccinated until the year 1898 when conscientious objection was at last allowed. As a matter of fact, these various Acts secured the vaccination of 90 per cent. and upwards of the available children until the year 1889. In the year 1871, Mr. Simon told the Select Committee inquiring into the Vaccination Act of 1867 that he believed that 97½

per cent of the population of London under 50 years of age, excluding infants, had either had small-pox or been vaccinated. He also said that he believed that in 1853 practically all the adult population of the country had either had small-pox or been vaccinated. These statements show how thoroughly well vaccinated England was prior to and up till the year 1871. We have the Government's own statistics from the year 1872 which show that—

In 1872, 94 per cent. of the available children were vaccinated		
„ 1873, 94½	ditto	ditto.
„ 1874, 94½	ditto	ditto.
„ 1875, 94½	ditto	ditto.

And so on, and it is not until the year 1889 that the percentage drops to 88·7. Surely, if vaccination had been the wonderful protection against small-pox it is represented to be, small-pox ought to have practically vanished from the country in face of such an enormous amount of vaccination. But what do we find 70 years after the introduction of the practice? The worst small-pox epidemic of the century. In 1871, the mortality per million persons living from small-pox was no less than 1,012. I will give here the annual mortality rates for the whole of the years from 1859 to show what a terrible epidemic it was which struck the country in 1871. The figures are as follows:—193, 136, 64, 78, 286, 364, 301, 139, 114, 91, 67, 113, 1,012, 821, 98, 88, 35, 99, 173, 74, 21, 25, 119, 50, 36, 82, 203, 11, 19, 37, 1, 0, 2, 15, 49, 27, 7, 17, 0, 8, 5, 3, 10, 75, 23, 15, 4, 1, 0, 0. The last year here represented is 1908, the Registrar-General's returns not giving later years yet.

But to proceed with the English experience further, from 1889 onwards till 1898 vaccination declined. The percentages of available children vaccinated for the years 1889-1898, inclusive, are as follows:—88·7, 87·1, 84·8, 83·1, 81·5, 78·2, 76·5, 74·0, 70·3, 69·3. In 1898, nearly one-third of the children born remained unvaccinated. Contrast the small-pox death-rate for that year with the rate for 1871, when so few remained unvaccinated. The rate for 1898 is only 8 against 1,012 in 1871. But in 1899 and in 1900 the percentage of vaccination increased owing to the introduction of the domiciliary visit system under the Act of 1898, and, in direct contradiction to the assertions of the pro-vaccinists, small-pox broke out, and in 1901 and in 1902 the death-rate rose, as a reference to the figures given previously will show, to 75 per million living. Surely, these and the other figures given show that out-breaks of small-pox are connected with some other cause than vaccination or the lack of it (unless it is true that vaccination itself may start a small-pox out-break as some people believe), and that the test of a

century's practice of vaccination has proved it to be a broken reed in the matter of protection against small-pox.

Next I will take Mr. Chowdhri's reference to European countries generally. He asserts that, thanks to vaccination, epidemics of small-pox have become very rare in Europe. I do not know what the general idea of an epidemic is, but if we in England had as much small-pox as well-vaccinated France and Italy have had during the past 10 years, we should begin to look into the matter. There are very few anti-vaccinists in either of those two countries and their vaccination laws provide not only for primary vaccination but also for the repetition of the operation. The Registrar-General publishes the number of small-pox deaths in the large towns of France, the population of these towns numbering from 13½ to 14½ millions during the years 1901 to 1907, for which years the small-pox deaths were as follows:—1,017, 2,553, 2,350, 735, 292, 562, 2,453. For Italy with a population of from 32½ to 34 millions, the small-pox deaths from 1901 to the latest year for which the returns are out (1908) were:—3,396, 2,413, 6,041, 3,093, 482, 169, 451, 561. In, comparatively speaking, badly vaccinated England we have to go back to the year 1881 before we find over 3,000 deaths from small-pox occurring in a population of 26 millions. In Spain, too, where we hear of no opposition to vaccination, there have been 38,000 deaths from small-pox from 1900 to 1908, inclusive.

Now I come to Mr. Chowdhri's statement that epidemics of small-pox have not been so frequent in India since the introduction of vaccination. If Mr. Chowdhri would study the vaccination reports for the different provinces he would see that a great deal of the small-pox in former years has been directly traced to the practice of inoculation, and the Government have gradually been suppressing this as far as they can. In the last report on Sanitary Measures in India (for 1908-9) we are told that an Act was passed during that year prohibiting inoculation in Burma. Referring to the Burma Vaccination Reports we find that out-breaks of small-pox and deaths from the disease have been directly traceable to professional inoculators. Here is absolute proof that the former practice of inoculation actually caused epidemics, and now that the Government has stopped the practice in so many parts of India, is it not natural to expect, without any other event, that small-pox would decline? But has small-pox really declined in India to any great extent? From 1883-84 to 1907-08 the following were the percentages of vaccinations performed in British India, as extracted from the last Government Report:—23·2, 24·25, 25, 24·93, 25·9, 26·3, 27·2, 27·5, 26·4, 26·9, 27·9, 29·7, 30·4, 32, 30·9, 31·4, 38·1, 33·9, 32·8, 39·1, 39·6, 42·5, 43·8,

42.6, 43.7. A steady increase in vaccination is here shown, and in the 25 years the number of births vaccinated has nearly doubled. But this by no means indicates the amount of vaccination done in India. In the last 5 years for which the returns are published, over 16 millions of children over one year and under six years were vaccinated, so that it is apparent that the percentage of children who survive of those remaining unvaccinated under one year of age is greatly reduced in the following years, and the actual number remaining unvaccinated altogether must be very few, seeing the enormous infantile general death-rate. Now contrast these figures with small-pox death-rate. I give the figures from 1880, *i.e.*, the small-pox death-rate per million living in British India:—377, 386.6, 396.7, 1168.1, 1695.6, 398, 241.5, 304.4, 452.1, 645.7, 594.5, 449.5, 433.7, 295.7, 196.8, 206.5, 642.3, 753.8, 262.6, 233.1, 406.1, 398.5, 511.1, 413.1, 244.1, 314.3, 484.6, 460, 750. These figures show that the death-rate in 1908 from small-pox was higher than in any year since 1884, with one exception (1897). How can it be maintained that vaccination has caused a decline in small-pox in India, in face of these official figures?

Next as regards the question of laymen sitting in judgment on doctors: does not Mr. Chowdhri know that the vaccination question can only be decided by an investigation of the experiences of those countries which have adopted the practice? Pro-vaccinists have everywhere to turn to statistics to try to prove their contentions, and surely doctors have not a monopoly of statistical ability! The doctors themselves own that there is no scientific foundation for vaccination, but they point to its results. Laymen can at once step in and study those "results" if they have brain and common-sense, and if their studies lead them to the belief that the doctors have all along been wrong in advocating vaccination, they have a right to say so, for what are doctors for, after all? Are they not trained so that by their closer acquaintance with diseases and disease causes they may help the people in their desire for health? If practical experience and the public records prove that the doctors are mistaken in any of their beliefs, the general public have a right to sit in judgment on the men whom they have entrusted with the care of the public health.

Then as regards bacteriology, Mr. Bechamp was the discoverer of those minute forms of life which we call bacteria, but modern scientists have twisted his theories into totally different suppositions to those he put forward with so much reason and after so much careful investigation and experiment. Bechamp did not believe in vaccination at all. He believed that bacteria only became dangerous when the conditions of life

was wrong, and to prevent them degenerating into poisonous germs, he taught that fresh air, cleanliness, and the observation of Nature's laws generally would suffice. Sir William Collins has preached the same lesson often, and English leaders of medical opinion now and again show signs that the same ideas have come to them. The medical profession, generally, however, clings to the idea that it is the germ itself which causes the disease, and refuses to acknowledge that the real cause is the condition of life and the nature of the patient's surroundings. G. W. Steven's book "In India" gives a vivid picture of the condition of life in the native quarters, and his common-sense view that the plague was spread through the awful overcrowding, dirt, and lack of light in the Indian towns is now shared by most of the more enlightened Indian officials. The plague germ would not have become dangerous, according to Mr. Bechamp, if the conditions where it occurred had not been so bad. As for the work done in laboratories being of benefit to suffering humanity, there is very little proof of this as yet. Take the investigations which have now been going for years into the cause of cancer. Hundreds of thousands of pounds have been spent in England on this work, but the investigators are no nearer a solution of the matter than they were when they started.

Lastly, I must say a word as to glycerinated calf-lymph. Glycerine, we were told in 1897 by the "Indian Lancet," is a nutritive medium for the growth of putrefactive and other germs. Glycerine then was the same as it is to-day. And to prove that glycerinated calf-lymph is capable, not only of injuring the person vaccinated, but of killing them, I may point to the statistics of the English Registrar-General, who records 232 deaths of infants from "Cowpox and other effects of vaccination," from 1899 to 1908, 1898 being the year the use of glycerinated calf lymph by public vaccinators was made compulsory. An average of 23 deaths a year officially acknowledged to be through vaccination, means a very much larger number really due to the operation but concealed under some other name, and an enormous number of cases also which do not end in death. To prove that many cases occur which are really due to vaccination but are put down to some other cause, I may mention that within the last few weeks a child at Wavertree, near Liverpool (England), died from the effects of "generalised vaccinia," and at the inquest it was stated that the lymph was too active, and yet the jury's verdict "Death from natural causes"! As for syphilis not being communicated by calf-lymph, cases have occurred in which a condition has resulted from vaccination with calf-lymph which could not be distinguished even by a surgeon trained in the study of the disease from syphilis itself.

I may add that I am fully aware that most doctors are doing their work nobly and unselfishly, but they are absolutely mistaken in their views on vaccination, and they go blindly on refusing to study these matters for themselves. The ordinary general practitioner admits that when studying for the medical profession he had far too much to do to trouble about going into the vaccination question for himself. He merely learnt how to vaccinate and left the rest for his leaders to decide. If they told him vaccination was a good thing, he accepted their word, but as for any real acquaintance with the subject, a few minutes' conversation with the average doctor proves how little he knows about the matter. But my quarrel is with those who know vaccination does not protect from small-pox—who have themselves come in contact with deaths from vaccinated small-pox and who have seen injuries from vaccination—and yet still mislead the public with cooked figures and untrue statements.—*The Hindustan Review*.

"Vaccination—An Exploded Fad."

A REPLY TO THE SECRETARY, NATIONAL ANTI-VACCINATION
LEAGUE, LONDON.

BY

DR. A. M. M. MUDALIAR, L. M. S.

Miss L. LOOT has done her portion of the work very admirably. She sincerely believes she has looked at the problem from all points of view. Nobody questions her sincerity in the cause. But, she might have avoided expressions like, "Doctors have not a monopoly of statistical ability;" "Doctors have all along been wrong in advocating vaccination." In the concluding paragraph she grows even more eloquent when she says:—"I may add that I am fully aware that most doctors are doing their work nobly and unselfishly, but they are absolutely mistaken in their views on vaccination, and they go blindly on refusing to study these matters for themselves. But my quarrel is with those who know vaccination does not protect from small-pox—who have themselves come in contact with deaths from vaccinated small-pox and who have seen injuries from vaccination—and yet still misled the public with cooked figures and untrue statements."

The first impression that an article like this would create is, that the scientific experts, who have all along been steadily advocating vaccination, must be compared to hot-headed individuals whom no argument would convince otherwise. That they are a very unscientific lot doggedly persisting in their opinions. But that is not the attitude

of the scientist. He has more reasons than ever, to prove his case. And every attack on such a true cause goes only to strengthen his hands. For the moment the anti-vaccination faddist enjoys some reputation. But these manoeuvres are a real gain to the scientist whose views had stood the test of time and promise to stand any invectives that may be, apparently reasonably, hurled against his advocacy. The popular applause may thus be gained for a time, but hard science gains immensely by such attacks. The writer has not made out a strong case. Any further attempt in this direction will only go to expose more fully and effectively the many weak points in the argument. Brow-heating is no argument. Statistics are very good when they are applied with the usual care. But when they are twisted to suit a certain end steadily kept in view, the arguments lose their virtue, and our enemies are really our friends most devoted to the cause of science. We scientists lose nothing by being compelled to allow the growth of public opinion in this manner. On the other hand, I say we are growing stronger than ever. We lose some time, but ultimately success is ours and *Virtue is its own reward*. Miss L. Loot has not made out a strong case when we carefully enter into a shifting and thorough examination of her articles. Let us examine it more carefully. In the year 1867, the Vaccination Act was passed importing into it many stringent clauses. And it was not until 1898 that the Vaccination Act was made less stringent by the introduction of the conscience clause. Then, practically speaking, it was not until 1867 that the Jenner's lessons were followed to the letter. Again, in 1898, it suffered a blow. 31 years is not a long period in the history of vaccination, and one should hesitate to draw conclusions from such very meagre experiments. Experience is an expensive agent and we have it here glaringly.

I must here refer to the utter absence of re-vaccination during that period of 31 years. Vaccination confers immunity only for a limited period, and if the individual grows out of that limited period, he is as apt to suffer from it as the unvaccinated thus affording, at the same time, a case in point to the anti-vaccinationist. Such has unfortunately been the state of affairs, but the scientist has to take courage at this comedy of errors. He should pause and take stock accurately of the exact state of affairs. How long does one vaccination protect any individual? Not all the length of his life.

Here is the key note, and if this is not reckoned along with the results achieved, one is apt to form imaginary conclusions which are at once wrong and unscientific. Fallacies like this lead to very discouraging statistics. And the anti-vaccinationist scores a victory in

the eye of the lay public and we see him parading these facts to the public and playing to the gallery. Vaccination should be done as soon after birth as possible and re-vaccination between the age of seven and ten and then alone could satisfactory evidence be collected. Without this important feature of re-vaccination vaccination can only be expected to put the evil day off and not altogether. Look at Germany, for instance, where vaccination and re-vaccination have been compulsory. I shall here quote from a very readable, reasonable and reliable pamphlet issued by the British Medical Association under the head of "Facts About Small Pox and Vaccination" (1905). At page 20 we find the following telling passage:—"Germany, which for many years has had the benefit of systematic primary vaccination and re-vaccination is practically free from small-pox, and its small-pox hospital accommodation is merely nominal. When the Vaccination Act of 1898 was before Parliament, statements on behalf of the Government led to the expectation that an Act providing for re-vaccination, subject to the so-called 'Conscience Clause' would be introduced in the following session. This hope was not fulfilled, and every outbreak of small-pox proves the continuing necessity for obligatory re-vaccination. Every reasonable opportunity should be taken by members of the medical profession to call the attention of members of parliament and of candidates for Parliament to the necessity.

Take the question so forcibly put by Miss L. Loot in her article:—"But has small-pox really declined in India to any great extent?" But why take India as an example? In India re-vaccination is not compulsory. And vaccination itself, except in Municipal areas, is not compulsory. And re-vaccination is not dreamt of. In India, vaccination is in its infancy, and it would be absurd to draw any conclusion from the statistics. Making out statistics from very meagre data is easy, but it is neither true nor convincing. The anti-vaccinationist in his hurry to trump up a case in his favour madly gets hold of a straw. This is neither scientific nor argumentative. We have yet to launch a proper, scientific method, to try it for some years to come, as in the case of Germany now, before we can condemn vaccination which has been hastily done by our anti-vaccinationist friend. It is very easy to find faults, to condemn established methods. But the fault-finding stage must be approached after the building passes muster. We have not attained that stage. And therefore we are only wasting our time in now directing our attention to the available statistics. So, would it be with every country where re-vaccination is not being rigidly enforced, and until such a happy consummation occurs, we should not air our

opinions as if we were unmistakably correct. I hope this controversy regarding vaccination will go far to ease the public mind of the fears and doubts regarding it, and would allow vaccination to have its full swing—vaccination and re-vaccination for some years to come. And then and then alone we in India would be in a position to draw very wholesome lessons. At the present moment I must only warn my readers against accepting for granted such views as are held by Miss L. Loot which views, I consider, to be very unscientific and unauthoritative.—*The Hindustan Review*.

Heart Failure under Ether.

J. Storup—As an overdose of ether causes death usually by respiratory failure, the following case in which death was due to heart failure is of special interest. A man, aged 39, had urethral stricture due to gonorrhœa. The urine was cloudy and contained blood and pus. The lungs, heart, and other organs appeared to be normal. As there were several strictures in the course of the urethra, and as one was almost impervious to the finest bougie, internal urethrotomy was performed under chloroform and a tunnel catheter was inserted. Seventeen days later the stricture again required division and dilatation. Ether was administered and the patient, who was very nervous, continued to struggle under the operation, although a large amount of ether had been given. The administration of the ether was continued, as a tunnel catheter was introduced, and the bladder was washed out with a solution of silver nitrate. At this stage, the respiration became deep and rapid, and the mask was removed. Two minutes later there was spasm of the muscles of the jaw and of the back of the neck. The pupils were dilated and face was cyanosed. The mouth was forced open, and the tongue was drawn out. Respiration, which had ceased, was continued artificially for a short time, after which the cyanosis and muscular spasm disappeared, and normal respiration returned. However, just as the danger seemed to be passed, there was a return of the cyanosis and mydriasis with loss of reaction to light. The pulse could not be felt, and the patient died in spite of artificial respiration and massage of the heart.

Ninety c.c. of ether had been given in a period of 27 minutes. The operation had lasted only a few minutes, and respiration had been satisfactory almost to the end. No increase in the secretion of saliva was observed, nor was the ether, which was subsequently analysed, found faulty. The necropsy showed that the valves and the size of the heart

were normal, but the muscle was dark brown and exhibited fatty degeneration. No arteriosclerosis or emboli were demonstrable. The right kidney was engorged with blood, and was double the usual size; otherwise it was normal. Nearly all the renal tissue had disappeared from the left kidney which formed a sack filled with blood and pus. The fatty degeneration of the heart must therefore have been due to pyonephrosis.—*The Medical Review*.

Remarks Concerning Typhoid Fever.

BY

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It is a well-known fact that certain diseases during the course of time become appreciably changed in their clinical pictures because of certain changes in environments of the direct causative germs. Certain germs lose virulence in the course of a certain length of time, altering to some extent the symptoms, severity, duration and occurrence of complications of the disease in question, while other germs change in the opposite way with corresponding changes of that particular disease.

During the past year Eberth's bacillus seems to have undergone a change, probably in the direction of diminution rather than increase in virulence. It is difficult to find definite attributable causes. Possibly the chief cause is the increased efforts on the part of the sanitary or health commissioners of the various communities to eradicate this disease by persistent hygienic and other methods, thus giving these micro-organisms less fertile fields in which to thrive and multiply.

The changes in the clinical manifestations of typhoid fever observed by others and myself may be summed up as follows:

The prodromes are less characteristic. Epistaxis is almost rare. The initial lassitude, weakness, anorexia and headaches are less severe, do not persist as long or, in other words, lead more quickly to the second stage of the disease, very often resembling the prodromal symptoms of influenza. In fact, it has been rather difficult to differentiate influenza from typhoid fever during the past year, particularly at the beginning of the disease.

The course of the disease presents interesting changes. The Widal reaction was negative in at least one-fourth of the cases and where positive was rather late in its occurrence. Instead of being positive during the eighth or tenth day of the disease it would not occur until the third week and in some cases almost towards the end of the disease after

four, four or even five attempts had been made to get a positive reaction. A few cases presented symptoms of the disease very mildly, indeed, and just as convalescence was about to set in, a very severe relapse occurred and the patient fought with might and main to overcome the prolonged high fever and the tendencies to hemorrhage and perforation. This relapse was followed by one or more milder relapses, giving the clinical chart a picture resembling closely that of some forms of miliary tuberculosis or of relapsing fever. Generally speaking, however, these cases presented milder fever than that of typical enteric diseases, but there was a greater tendency to tympanites, which caused great distress to the bitterly complaining patient. Constipation was almost the rule. The classical rose spots were absent in fifty per cent. of cases and where present were quite few, scattered and atypical. The spleen was enlarged only in about sixty-five per cent. of cases. There was a peculiar tendency for thrombosis of the femoral veins, and out of ten cases observed at the Jewish Hospital during the fall of 1910, three presented this condition. One of them was bilateral. All, however, recovered with the proper management. Some of these cases even resembled during their entire course a typical hectic fever, there being during the course of the day slight chilliness followed by elevation in temperature and succeeded by profuse perspiration.

We may conclude, therefore, in the light of these remarks that in due time typhoid fever will appear as a distinctly different disease from that of the typical descriptions of several years ago, and, furthermore, we may look forward, and that in the very near future, by virtue of the observed gradual diminution in virulence of the germ, to the complete eradication of this disease because of the unfavourable environments of this micro-organism.

A few interesting facts may be presented here, brought out by observation and experience referable to the treatment of typhoid fever. The dreaded complication, perforation, is due to a simple mechanical process chiefly, and that is the distention of the bowel with gas. The thinning of the bowel tissue because of this, and Peyer's patches being ulcerated and not being able to resist the increased tension within, the bowel gives way, and the perforation results. The chief object in the treatment of complications should be in the avoidance of them, and that can be almost always accomplished by the prevention of tympanites or the accumulation of gas by means of the administration of minute doses of oil of turpentine in emulsion, care being taken, however, to make the doses minute, because of the danger of irritating the kidneys. Then again we must use the usual measures to overcome the tendency to constipation, which is a potent factor in the causation of tympanites,

and this can easily be accomplished by the administration of moderate doses of olive oil given regularly during the course of the disease. Olive oil can be given with impunity and with marked benefit to patients suffering with typhoid fever, not only because it tends to overcome constipation and indirectly assists to prevent perforation, but because also of its nutritive value, it being a well-known fact that olive oil is a food. There is no other disease which requires careful feeding and plenty of it more than does typhoid fever. The value, therefore, of olive oil cannot be overestimated. Of course we must take into consideration the dislike that some patients have for oils, but this condition can be overcome by flavoring the oil in many ways, too numerous to mention, and which are familiar to every physician.

The dreaded complication, hemorrhage of the bowel, can be avoided to a considerable degree by the daily administration of moderate quantities of gelatine. This seems to have been overlooked by almost the entire medical profession, but the virtues of this procedure do not require even second thought. The entire medical profession are fully aware of the hemostatic properties of gelatine and there is hardly a dissenting voice. Furthermore, gelatine also is classed as a food and therefore aids in the prevention of the starvation to which the typhoid patient is usually subjected. Considering the question of diet in typhoid fever the medical profession have been hotly discussing the various details, there being just as many in favor of an almost full diet as of the time-honored liquid, extremely restricted diet. Those who timidly hesitate to adopt the apparently dangerous practice of feeding these patients on toast and scraped beef and boiled rice, etc., may easily compromise and adopt a diet which will fill every indication and avoid the usual picture of inanition, which is almost the rule in convalescent cases. My treatment of these cases during the past year was of this compromising nature. In addition to the usual liquid diet allowance they would be permitted a one or two-minute egg three times a day; a pint to a pint and one half of sweet cream; the afore-mentioned gelatine and olive oil. We need not discuss the nutritive and fattening virtues of sweet cream, and we need not mention the satisfying tendencies, both actual and mental, of the soft-boiled eggs. These patients became well, hardly the worse for their experience.—*The Dietetic & Hygienic Gazette*.

Treatment of Bronchial Asthma.

August Goldschmidt, starting with the admission that it is impossible at present to effect a permanent cure of bronchial asthma by medicine

records the results which can be obtained by a few drugs in this affection. He leaves alone the question of the physical treatment of asthma since this requires institutional treatment. In the first place, he believes that 1 per cent. solution of morphine with 1 in 1,000 solution of atropine sulphate gives the best results during an acute attack. He advises not less than 1 c. cm. of the solution injected subcutaneously. He is doubtful whether it is advisable to use adrenalin for this purpose.

If the attack can be dealt with very early, von den Veldon's theobromine preparations do good service. He prefers the following prescription:—R/Caffeine valerianic 0.25 gram; theobromin sodio salicyl. 0.5 gram. M. ft. Pulv. Sig. One or two powders to be taken during the attack. If the attack has been set going by an attack of bronchitis iodides appear to answer well by removing the secretion. He prefers the Sodium salt. He does not like pyrenol as well as the ordinary iodine, but when the patient does not take the latter well, sajolin may be used.

The treatment of asthma apart from the acute attack consists chiefly in giving atropine or some substitute. He is, however, of opinion that both when given by the mouth or subcutaneously the well known intoxication symptoms occur frequently. Fickles has recently reported a case of atropine mania in an asthmatic. A less dangerous method of application consists in applying it by means of a nasal inhaler.

His prescription is as follows:—R/Alpin, nitr. 0.3 gram, Eumydrin, nitr. 0.15 gram, Glycerini 7 grams, aq. dest 25 grams, Ol. pini pumil. 1 drop. M. D. S. To be inhaled from the spray apparatus (Tucker's). Since alypin produces some hyperæmia, it is advisable to add 8 to 10 drops of a 1 in 1,000 solution of adrenalin or suprarenin to each 10 c. cm. of the solutions. As the adrenalin does not keep well, it is not wise to mix it with the spray solution, but to add it fresh each time.—*The C. M. Journal*.

Absence of Abdominal Respiratory Movement an Indication of Pericarditis.

BY

W. ESSEX WYNTER, M.D.,

In a disorder so serious and attended with so little obvious indication as pericarditis, an additional and manifest sign should be welcome. Such is inhibition of the action of the diaphragm, indicated by suppression of normal abdominal respiratory movement. It has been overlooked probably from examination being unduly restricted to the chest. Loss of abdominal respiratory movement as an indication of disease, except in paralysis of the phrenic nerves, has been to a great extent

monopolized by observers in connection with peritonitis and acute abdominal lesions. Primary thoracic disease, however, has its share in causing suspended function of the diaphragm, though in the majority of instances affecting the lung and pleura this is one-sided, and the influence on abdominal movement proportionately less marked. In acute pericarditis, on the other hand, the cessation of phrenic action is bilateral, and consequently absence of abdominal movement is as obvious as in abdominal disorders, albeit other abdominal manifestations, such as muscular rigidity and general tenderness, are lacking. The following cases bring out this point with great force, as the loss of abdominal movement led to mistaken diagnosis of abdominal lesions.

A young man was seized with acute epigastric pain while waiting at table. Conspicuous absence of abdominal movement led to the diagnosis of perforated gastric ulcer, and the writer was asked to take him into the Middlesex Hospital for operation. Next morning the acuteness of the pain had diminished, he had enjoyed some sleep, and was obviously better, clamoring for food, and impatient of restraint. There was no evidence of free gas in the peritoneum or local irritation. A routine examination revealed nothing. Next day he got up and went out of his own accord, but experienced a recurrence of the pain. When re-examined on the fourth day, pericardial friction was obvious, there was marked dyspnoea with præcordial pain, the abdomen remaining immobile. Pericardial friction was audible 4 days. Temperature 101.4° , pulse 96. On getting up a week later the temperature rose to 103° , and the pulse to 104, but no further development occurred, and he was able to leave the hospital 10 days later.

On Nov. 2, 1909, a man, aged 40, was admitted with pain in the abdomen extending into the thighs, headache, anorexia, vomiting, and parched mouth of two days' standing. The temperature was 102.6° , pulse 92. He lay on his back with his legs drawn up, the right rectus abdominis was tense, and the right iliac region was tender. Abdominal respiratory movement was scarcely discernible. A routine examination showed only a reduplication of the second cardiac sound. No local indication of pericarditis then existed. A consultation was held, and the almost inevitable diagnosis was appendicitis. Under rest the symptoms subsided in the next three weeks. Abdominal movement was more apparent and advantage was taken of the quiescent period for appendectomy, which was performed on December 7. Careful examination revealed no morbid condition, and there were no adhesions. The incision healed rapidly, but after five days there was a rise of temperature with recurrence of symptoms, and on Dec. 12 pericardial friction

was marked, the heart's apex being in the fourth space in the nipple line. Pulse, 90 to 100. The diaphragm was not contracting at all, the abdomen actually sinking in with each inspiration. The stomach was dilated, and its resonance could be traced as high as the fourth intercostal space in the axilla. Breath sounds were absent at both bases, but there was no complete dullness on percussion. On Dec. 16 radioscapy showed a large shadow in the heart region suggestive of pericardial effusion. The diaphragm was motionless in the position of expiration. On Dec. 22 diaphragm movement was returning, though friction could still be heard over the heart. Breathing became audible at both bases. A week later friction had disappeared, but a systolic apex murmur was audible. The man was discharged on Jan. 8.

These cases illustrate temporary remission of symptoms of pericarditis attending rest in bed without special treatment, and suggest that the inflammation possibly commencing in some other part than that immediately in contact with the chest wall, manifested itself by reflex inhibition of the diaphragm some days before the appearance of ordinary signs.

On Dec. 1, 1905, a man, aged 21, with a history of rheumatism six years, and also three months before, was admitted with endocarditis and pericarditis. Temperature 102.2° , pulse 130, respiration 36. There were a double aortic bruit, the bruit de galop, and friction over the præcordia. Abdominal respiratory movement was absent. By Dec. 4 these active signs subsided and there was a return of abdominal movement, but joint pains continued till Dec. 11. He was discharged on Jan. 12.

On Sept. 22, 1906, a boy, aged 9, was admitted on account of pain in the epigastrium, of one week's duration, extending to the left clavicle. Tonsillitis had also existed five days. Temperature 102° , pulse 120. He lay with his arms above his head, flushed and breathing rapidly. The præcordial dullness was extensive and described as pear-shaped. The heart sounds were muffled. There was a faint mitral regurgitant murmur, with accentuation of the pulmonary second sound. Friction could be heard all over the pericardium, but was loudest over the fourth costal cartilage and sternum. There was tenderness on pressure in the epigastrium, and the abdomen moved very little with respiration. There was slight rigidity of the recti abdominis. By Oct. 2, friction had subsided, but there was a recurrence of tonsillitis and he was not discharged till Nov. 10.

On June 6, 1907, a girl, aged 16, was admitted with rheumatism and tonsillitis of a fortnight's duration. She improved speedily, but on getting up there was a relapse, with pain in the epigastrium. Tempera-

ture 102°, pulse 120, respiration 50. Præcordial dullness extended laterally 1½ in. to the right of the sternum, outside the nipple line to the left and upwards to the third rib cartilage. Pulsation was felt in the third left intercostal space. The observation was made that "when the chest rises in full inspiration the abdomen falls in, and *vice versa*." She was discharged convalescent on June 26.

Absence of abdominal movement is fairly constant in acute pericarditis, especially that with fibrinous exudate. When the front of the body is fully exposed, the stillness of the abdomen is very striking, suggesting peritonitis, unless, as sometimes happens, there is inspiratory recession, which might mislead, unless the want of correspondence with the movement of the upper chest is noticed. The inertness of the diaphragm is not merely inferred, but by radioscopy can be observed, the midriff mounting high into the thorax, and exhibiting no contraction and in some instances an actual rising of ¼ in. with each inspiration. In one case the contents of the upper abdomen, such as the kidney and opaque masses in the intestine, could be seen to participate in this upward inspiratory movement.

Concomitant and indeed consequent phenomena are a tendency to dilatation of the hollow abdominal organs, especially the stomach collapse and loss of function in the lower lobes of the lungs, slight upward displacement of the heart, and of the organs beneath, and in contact with the diaphragm. Loss of abdominal movement, as a sign of pericarditis, is the more valuable, in that it may precede and outlast the other indications. It explains the cyanosis and dyspnoea so usual in the complaint, and the upright position so commonly assumed. The former is the effect of respiration restricted to the upper lobes of the lungs. The latter points to an unconscious effort to utilize the weight of the abdominal viscera to depress the passive diaphragm and enlarge the thoracic area.

If loss of abdominal respiratory movement is well marked in the absence of more obvious thoracic and abdominal lesions, pericarditis should be closely looked for. If this sign is wanting dubious indications of pericarditis may be discounted. In the current descriptions of the disorder this symptom is not recognized, but Gibson, in his text-book published in 1901, says: "Interference with the action of the diaphragm is sometimes observed, and leads to discovery of pericarditis. It is obviously due to reflex action, and may, or may not, be associated with painful sensations." The writer has not seen an acute case which failed to show this sign.—*The Canadian Practitioner & Review*.

Functional Dyspepsia.

BY

ALLAN B. FEARNLEY, M. B.

It is said of an eminent physician, now deceased, that his advice to his students on the subject of the use of drugs in dyspepsia was as follows: "Gentlemen, when you fail with your alkalies try with your acids," and thus sums up the attitude with which the general practitioner is only too prone to regard the treatment of this common complaint. Familiarity breeds contempt, and although it is admitted that a wide clinical experience is essential for the acquirement of an accurate knowledge of any disease, yet such a condition as dyspepsia, which every practitioner has ample opportunities for studying every day, and thereby building up a sound clinical experience, is neglected, and merely treated empirically—groping in the dark, instead of being conscientiously studied.

This attitude is probably accounted for by the confusion of thought which arises from the necessarily inadequate teaching devoted to the subject in hospitals, producing a feeling of despair of ever arriving at any accurate knowledge of the true causes of the complaint, and, therefore, of its successful diagnosis and treatment.

AN ATTEMPT AT CLASSIFICATION.

Yet in spite of the obvious difficulties of a diagnosis, which must to a large extent rest on subjective symptoms described with more or less inaccuracy by the patient, and despite the absence of practical and reliable clinical methods, it is nevertheless quite possible to form a perfectly definite and simple scheme of tabulation into which practically all cases of purely functional dyspepsia will fall. It must be clearly understood that such a scheme is only a "working plan," founded on general principles, not pretending to be scientifically accurate in the absence of scientifically accurate data—not dogmatic, but adjustable to each individual case.

To begin with, then, the old classifications which are still to be found, even in some recent text-books, are best forgotten—renal, flatulent, nervous, irritative, bilious, etc. For after excluding dyspepsias secondary to organic disease and to general diseases such as phthisis, morbus cordis, cirrhosis, the gastric crises, etc., there are two types of functional dyspepsia, and only two—(a) the hypertonic type, characterized by an excessive secretion of hydrochloric acid and probably also in most cases an increase in motility, causing more or less cramp or spasm, and (b) the atonic type associated with a diminished acid secretion and certainly by a decrease in motility.

This classification will be found practically to cover all cases of purely functional dyspepsia. Every case should be approached on these lines and all questions asked and examinations conducted with the object of deciding to which of those two classes the case belongs.

On what, then, does the diagnosis rest? Firstly, there are two fairly definite types of patient corresponding to the two classes described.

The hypertonic is typically otherwise robust, with large appetite often athletic, a meat eater, and seldom an abstainer, what may be called the "positive" type, and, a most important point, with a high-tension slow pulse. Pain is his most pronounced symptom. Whereas the typical atonic is the "negative" type, flabby, tired, often anæmic, with nausea in place of appetite, and a low-tension pulse, complaining of discomfort and flatulence rather than pain. Both are almost invariably constipated.

With regard to symptoms, any dogmatic statement is dangerous, since in practice the two types merge into one, except in one respect, which, if it is marked, determines the diagnosis—namely, time of onset of the symptoms.

THE HYPERTONIC TYPE.

In the hypertonic dyspeptic, acid probably continues to be poured out after all the food has passed the pylorus, that is to say, the symptoms begin after digestion has ceased, some hours after food, and this also explains the fact that these cases are often relieved by taking food, so that the patient may ascribe all his symptoms to hunger.

There are two other symptoms which, when they appear, are characteristic of the hypertonic form—namely, heartburn and pyrosis—the gushing of alkaline fluid from the mouth being presumably an attempt of nature to deal with the trouble by the secretion of a super-alkaline saliva.

In the atonic form the lack of acid is probably always associated with decreased motility; the food remaining too long in the organ, becomes, as it were, a foreign body, and calls forth a profuse mucous secretion from the stomach, which probably never becomes properly emptied and clean; therefore the symptoms appear as soon as the food enters the stomach and remain more or less intense until the time for the next meal.

Occasionally home remedies which the patient has tried may help in diagnosis. Partial relief obtained from bicarbonate of soda points to the hypertonic form; from acid fruits, such as oranges, to the atonic. Sometimes no definite diagnosis can be made till the effect of drugs

have been tried. Under such circumstances it is always wise to treat all doubtful cases as atonic; since an error in this direction causes less discomfort to the patient than the exhibitions of acids would in the hypertonic form.

TREATMENT.

In the treatment of dyspepsia there are two indications common to both varieties—(a) attention to the teeth where necessary, and (b) correction of constipation. Apart from this the treatment of each variety is distinct.

General Treatment consists of rest in bed for a few days in aggravated cases, and, where possible, in freedom from mental worry, overwork (especially where associated with hurried mastication), and removal from uncongenial surroundings.

In the hypertonic form hot baths and Turkish baths do good in promoting excretion from the skin, since it is probable that the condition is associated with some kind of auto-intoxication by absorption from the intestine. Vigorous exercise is also indicated in these cases for the same reason.

In the atonic type, abdominal massage and graduated exercises, such as are used in ordinary chlorosis, are useful.

DIET.

In the causation of functional dyspepsia, diet probably has much less to do than would appear at first sight, with a few exceptions. For instance, it is probable that excessive meat eating, especially when combined with a free consumption of alcohol, and when associated with lack of sufficient exercise, predisposes to the hypertonic form and to the high arterial tension associated with it, while common salt probably assists in the production of the acid in the gastric juice, and condiments—mustard, etc.—stimulate its excessive secretion. Therefore in the dietetic treatment of dyspepsia, where there is no actual gastritis present, the indications are few—limitation of meat and alcohol in hypertonic cases, with substitution of boiled meat for roast and exclusion of salt and condiments, and in atonic cases a "dry" diet with exclusion of green vegetables, which aggravate flatulence and addition of alcohol daily to one of the meals. By a "dry" diet is meant avoidance of "slops," which again tend to increase flatulence, and the substitution of dried bread or hard dry toast for ordinary soft bread.

DRUGS.

The first indication is the treatment of the constipation, and for this the best aperient in all cases to begin with is calomel. In hypertonic cases associated with high-tension pulse, its use may be continued

for a week in fractional doses (gr. 1-6-1-4) every night, assisted by dram doses of sodium sulphate in half a pint of water every morning. It is a detail of some importance to withhold natural mineral waters in these cases, inasmuch as they contain considerable quantities of sodium chloride, and are therefore indicated in the atonic form, though here calomel should not be continued, being replaced by some such drug as cascara.

Coming to drugs which are intended to act directly upon the stomach, the important point is that they must be administered after food; if they are to modify the course of digestion they must be given during digestion. Administration of alkalies before meals, with or without the bitter infusions, is good, but simply from the point of view of lavage; and is therefore equally good in either variety, and to be most effective must be given in half a pint of water.

INDICATIONS FOR ALKALIES.

In the hypertonic cases, then, the obvious cry is for alkalies, the best being sod. bicarb. and bismuth carbonate in combination, and given in large doses. Probably it is useless to give less than 20 gr. of the bismuth salt as a dose, or, if the fluid form is used, the B. P. liq. bismuth et ammon. cit.—using 2 drachms as a minimum dose—with either a sedative such as HCN may be combined. Bismuth is also administered in the form of lozenges given when the pain comes on. These probably act mechanically to a certain extent at least, causing an increased flow of alkaline saliva, since the amount of bismuth in them is too small to have much effect, and also the pain may be to some extent relieved by sucking any hard substance, such as a pebble. If there is any gouty tendency, guaiacol may be separately administered in cachets.

ACIDS.

In atonic cases the important drug is hydrochloric acid. It must be remembered in prescribing HCl that in many of these cases the gastric mucosa is in an irritable condition, and may therefore need the addition of morphia in the form of liq. morphia hydrochlor. To enable it to stand the acid. The morphia salt should, of course, be withdrawn as soon as possible. The mixture may be made up with a bitter and a carminative, such as peppermint or ginger; sometimes pepsin may be added, though its advantages seem to be disputed.

AFTER-TREATMENT.

It must be remembered that when the acute stage has passed off the patient still has the tendency to relapse as soon as treatment is stopped, because the dyspepsia is merely the symptom of an underlying cause.

Most cases of hypertonic dyspepsia are associated with a raised arterial tension tending to actual arteriosclerosis, and in these a partial vegetarian diet should be advised, with considerable restriction of alcohol, and in the more intractable cases a more or less prolonged course of iodides with potass. citrate and an occasional short course of fractional doses of calomel. In the atonic form the underlying cause is debility, usually associated with some such condition as convalescence from acute illness, prolonged mental worry, or overwork, and often with anæmia.

It will be found in actual practice that diagnosis and treatment are often not quite so straightforward and simple as they appear upon paper. It must be remembered that we are depending almost entirely upon subjective symptoms for diagnosis, and that patients are apt to exaggerate and make misleading statements. There are certainly some cases where no organic lesion can be discovered, and yet they cannot be made to fall under either of the classes described, as, for instance, the true neuralgia found that by approaching cases of functional dyspepsia on some such lines as those indicated there will be fewer disappointments of the stomach, known as gastralgia; but nevertheless it will be both for patient and doctor.—*The Canadian Practitioner & Review.*

SURGERY.

"Chloroform."

BY

MANAYATH ANANDAN.

Sub. Asst. Surgeon, Alatur.

Just lean your head this way,
Breathe steadily and deep;
No—don't fight so against it,
And there, you mustn't weep:
There's nothing to be frightened of—you will soon be fast asleep.
A throbbing in your ear drums,
One sweet and scented breath,
A warm and sickly feeling—
Then darkness gapes beneath,
And you are falling, falling into the arms of death.
Borne on a rushing river
You fly through regions vast,
Well known to you in childhood
The country of times past,
Where everything forgotten and desolate is cast.

You seem to spend a twelve-month
 In trying hard to dream,
 But strange to say you cannot—
 Alive yet dead you seem ;
 Whilst all the time you're struggling in the darkness for a gleam.
 Then suddenly again
 On mighty wings you soar ;
 They beat and throb amain,
 Their roll becomes a roar,
 As with a sound like thunder you see the day once more.
 Your fingers crawl and creep
 Across the counterpane;
 You start from troubled sleep
 That lulls your dizzy brain.
 Until at last you feel the cruel throbbing pain,
 And with a moan (a muffled groan) you come to life again.

Extracted from "The Prescriber."

Pneumatic Rupture of the Bowel.

AN extraordinary case of accidental rupture of the intestines is reported by Dr. Andrews in *Surgery, Gynaecology and Obstetrics*, resulting from the use of a compressed-air apparatus. The patient, a young Pole, was using the apparatus to drive the dust from his clothes, and in passing it over his trousers held it in front of the anus, without, however, applying it against himself. He at once fell to the ground and was brought to the hospital in an apparently moribund condition. His face was cyanosed, the pulse imperceptible, the abdomen enormously distended, and the neck and chest emphysematous. Passage of a rectal tube caused no escape of gas. Under local anæsthesia an abdominal incision was made, resulting in a tremendous escape of gas. The patient's condition at once improved rapidly. Five hours later laparotomy was performed, as intestinal rupture was evident. The rupture was found 12 centimetres long in the sigmoid flexure. A resection was performed with latero-lateral anastomosis. The patient recovered satisfactorily. The author has been able to collect fifteen other cases of this kind in the United States almost all unpublished. In six of these laparotomy was performed—four died and two recovered. The remaining nine were not operated upon and all succumbed. The diagnosis of the condition of course depends largely upon the history of

the accident, but the globular meteoric distension of the abdomen is very typical. The rupture generally occurs in the sigmoid, and it is frequently multiple. Resection is preferable to suturing the rupture, on account of the liability to subsequent stricture, which actually occurred in one case.—*The Hospital*.

General Anæsthesia with Reduced Circulation.

AT a meeting Dr. Delageniere gave an interesting account of his experience of administering a general anæsthetic with the circulation reduced by excluding the blood in the four limbs from the general circulation according to the method devised by Klapp. He has employed this method in 1,179 cases. According to his observations, the anæsthesia obtained in this way is more rapid and requires a much smaller dose of anæsthetic than under ordinary circumstances. The recovery is also more rapid and there is less tendency to vomiting, albuminuria, etc. The chief purpose of the method, however, is to enable one to combat syncope by at once taking off one or more of the constricting bandages around the limbs. The blood previously excluded from the circulation returns and, as it is free from chloroform, it acts as a diluent of the overcharged blood. Moreover, as it is charged with carbonic acid it stimulates the respiratory centre. The chief objection to the method is the liability to phlebitis from constriction of the limbs. The author has observed four cases. The Klapp method, it may be interesting to note, has been tried by several London anæsthetists since it was first reported on.—*Ibid*.

Tincture of Iodine in Erysipelas.

THE uses of tincture of iodine as an antiseptic are daily becoming better recognised. Dr. Ferrari Mario now describes its advantages in cases of facial erysipelas. Method of treatment: (1) The zone of invasion of the erysipelatous infection must be painted with a sterilised tampon of cotton-wool impregnated with tincture of iodine; (2) next the infected area must be painted in a similar way with a second tampon; (3) the infected area and the part immediately surrounding it are then dressed with sterilised wool. This dressing is very important, in order to prevent scratching and secondary infection. The iodine solution should be freshly made and of a strength of 10 to 12 per cent. In the beginning the author made two applications, morning and evening, though he found later that even better effects were obtained by administering five or six less thorough paintings through the day. He has used this method with excellent

results in thirty-eight cases of erysipelas in different parts of the body.—
The Hospital.

On Boils.

IN the light of a personal and prolonged experience of recurrent furunculosis, Dr. Shingleton Smith contributes some valuable observations on this subject to the *Bristol Medico-Chirurgical Journal*. For several months he suffered from very severe boils, each one appearing as the previous one was healing, which caused great pain, enlargement of the inguinal glands, and partial disablement. The suction cups known as Bier's treatment were tried repeatedly and in all stages of evolution of the boils; but nearly always they made the condition worse instead of better, except in the case of large boils which had already been freely incised. The cups also caused aggravation of the severe pain of the boils. Other treatments were equally inutile—sulphur and mercurial inunctions, tonics, hot disinfectant baths. At last Dr. Smith had a culture taken and a vaccine made; the organism found was the staphylococcus pyogenes aureus. He began with twenty million for a dose, and a healing boil promptly relapsed and became painful: next day the temperature rose to 103° F. Amelioration then set in, and increasing doses once a week soon controlled the furunculosis, though slight local and constitutional evidences of a negative phase appeared at first. In six months the acquired immunity apparently wore out and a new boil appeared; after a dose of 250 million cocci a crop of pimples appeared, but soon aborted. Two more abortive boils followed at intervals of three months each. The other element in the treatment on which the author lays stress is the painting of each centre as soon as possible with liquor iodi fortis; by this means many pustules were withered up before they had time to reach the phlegmonous stage of a full-blown boil.—*Ibid.*

Abdominal Pain: Its Diagnostic Significance in Surgical Diseases.

BY

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Acute intra-abdominal pain, or colic, indicates a lesion of the peritoneum, or of its afferent nerves. The viscera which are capable of colic are in relation to the peritoneum. Over-distension of the

esophagus does not produce colic, but distension of the intestine does. The ureter is susceptible to colic, but not the urethra. Colic is a disorder of the peritoneum. The milder abdominal pains which do not have to do with the hollow or tubular viscera cannot be called colic.

Rigidity of the muscles of the abdominal wall is a protective manifestation directed to preventing pressure from being inflicted upon the diseased peritoneum-covered viscera. It is one of the important manifestations of pain. It persists in all inflammatory diseases of the peritoneum until the local nerve function is destroyed or until the absorption of toxins obtunds the sensibility of the nerves.

A patient with abdominal pains should under all circumstances have the benefit of an examination of the bared abdomen. While this may seem like an unnecessary admonition, still it is too common a practice among some physicians to prescribe for abdominal pain without such an examination, and many of the cases of serious disease which come to the surgeon too late can be charged to this neglect.

In palpating the abdomen for pain, the greatest gentleness should be employed and the confidence of the patient should be secured. Voluntary and involuntary muscular rigidity should be differentiated, as it is the latter which characterizes inflammatory conditions involving the peritoneum. When the most complete relaxation possible is desired, together with the consciousness and pain appreciation of the patient, by immersing the trunk in a warm bath at a temperature of 107 deg. F., the best results will be secured.

In *gastric ulcer*, pain may not be a prominent symptom, although it is usually present. It is commonly referred to a small area in the epigastrium. Diffuse pain speaks against gastric ulcer. It develops gradually, is of a burning, cutting or boring nature and radiates to the back or precordium. Usually the pain radiates towards the left subscapular region. Pain under the right scapula suggests ulcer of the pyloric region. The pain is increased by food. Precordial pain suggests ulcer of the front and upper part of the stomach. If the pain begins within a half-hour after eating, the ulcer is probably near the cardiac orifice or at the lesser curvature. If near the pylorus, the pain comes on one, two or three hours after eating. Fluid foods cause the least pain.

Epigastric tenderness in ulcer of the stomach is usually well marked. Often the recti are rigid. The tenderness is usually localized in a small area. Rarely it is more diffuse. The most common location of tenderness is a small area in the middle line nearer the ensiform cartilage

than the umbilicus. In an old ulcer which has become indurated tenderness may be absent. A tender point is sometimes found in the back just to the left of the ninth or tenth dorsal vertebra.

Vomiting usually relieves the pain. An ulcer may by reflex irritation cause spasm of the pylorus, which is painful. The vague discomfort called gastralgia may arise from an ulcer. It is solid food which usually induces the pain. The ingestion of water rarely causes it. The pain which is brought on by taking food usually lasts for some time, often until the stomach is emptied, or an alkali, demulcent, or local anesthetic administered. The pain may exceptionally be general, heavy, aching, and dull. It may occur only after some dietary excess or indiscretion. If pain is constant, persisting when the stomach is empty, as well as after food, if it is present before breakfast, it is probably not due to gastric ulcer. Hyperacidity does not cause pain unless there is an abrasion of the mucosa. For an admirable discussion of this subject the reader is referred to a paper on "GASTRIC ULCER" by Dudley Roberts, in the *Medical Record*, October 17, 1908.

In *gastric cancer* the pain is quite variable. It may be absent. There may only be a sense of discomfort after eating. About 10 to 15 per cent. of cases do not show pain as a prominent symptom. When present, it may be continuous with exacerbations after eating. In many cases it is present only after the ingestion of solids. It is not distinctly localized as ulcer. When the disease causes pyloric obstruction, the peristaltic contractions cause a cramp-like pain, which is relieved by vomiting. The pain is usually referred to the epigastrium. In some cases it passes through the back, or it may be felt only in the back. Tenderness as a rule is absent. Fluids give the least pain. Other tumors of the stomach, such as sarcoma, usually give some pain.

In *ulcer of the duodenum* the pain is delayed after taking food. It may not occur until four hours after a meal. It often radiates to the subscapular region of the right side or along the costal margin to the lumbar region. Often the pain is relieved by the ingestion of food. At night digestion is slower and the pain may not appear until six hours or more after the last meal. The patient thus awakened in the night may relieve the pain by taking a glass of milk.

Pancreatic disease, whether acute or chronic inflammation, lithiasis, cyst, or neoplasm, is usually associated with pain. Certain slow degenerative changes give no pain. The epigastrium is usually its seat. At times it is referred to the back. Sometimes the pain is a colic, often mistaken for disease of the bile-tract or intestine. The pain is not characteristic and varies much with the nature of the disease. It is

of value as a diagnostic sign only when considered with the other symptoms. A chronic jaundice, accompanied with some slight epigastric discomfort and enlargement of the gall bladder, with no colicky attacks referable to the bile tract, should suggest enlargement of the head of the pancreas. Such an enlargement may be due to inflammation or cancer, but most probably the former.

Acute pancreatitis should be thought of when sudden pain develops in a previously healthy individual, in the upper abdomen, with rigid recti, vomiting, collapse, distention, constipation and the urinary and focal signs of the disease. The pain of this condition must be differentiated from that of the mesenteric artery, perforating duodenal or gastric ulcer, acute intestinal obstruction and acute biliary disease.

In *disease of the biliary tract*, the pains are located in the right hypochondrium and tend to radiate towards the right shoulder. If pressure in this region causes pain which radiates to the right scapular region, the disease is probably in the bile tract rather than in the stomach. In cholelithiasis the pain is usually not relieved by vomiting; in ulcer of the stomach it is. In acute painful disease of the gall bladder the patient is unable to take a deep inhalation when the examiner's fingers are hooked under the right costal arch. Chill usually indicates lithiasis in differentiating between gastric ulcer and gall-stone pains. Long intervals between painful attacks suggests cholelithiasis. In malignant disease of the bile tract pain is absent, or but very slight. Colicky pains and tenderness over the gall bladder indicate cholecystitis, but it should not be forgotten that a high-lying appendix, acute inflammation of the head of the pancreas, and acute hydronephrosis may produce similar pains.

In *typhoid ulcer* the pain is usually in the lower right quadrant of the abdomen. Tenderness can be elicited from the beginning of the ulceration. As soon as the ulcerative process has produced local inflammation of the peritoneum protective rigidity of the abdominal muscles appears. When perforation takes place, there is depression with sudden pain which at first is rather general and then is referred to the location of the perforation.

The pain of *appendicitis* in acute attacks is first referred to the region of the umbilicus, and then after a few hours becomes localized in the right side of the abdomen in the region of the appendix. Sudden subsidence of severe pain indicates perforation. The protective rigidity of the overlying abdominal muscles is characteristic. The pain is chronic, appendicitis is variable. It may be vague, expressed in local discomfort, dragging, or manifest in reflex discomforts. There may be no pain.

Tenderness in appendicitis will usually be found most acute just at the site of the most active inflammation. This may be at the top of the appendix or anywhere in its length. It should be remembered that McBurney's point usually represents the base of the appendix. If a line is drawn from the point of greatest tenderness to McBurney's point, the line will generally show the direction and position in which the appendix lies.

There are many forms of abdominal pain which must be differentiated from that of appendicitis. *Tuberculosis* of the cecum gives a constant discomfort. In *cancer of the cecum* the pain is colicky, while the lumen of the gut is but little encroached upon, but when it becomes much narrowed the pain becomes that peculiar to intestinal obstruction. *Rheumatoid arthritis of the spine* often gives periodic pain which is referred to the nerve terminals. If the disease involves the lower dorsal or upper lumbar joints the referred pain may be in the lower anterior abdominal wall. This hypersensitiveness is superficial, and any muscular rigidity caused by it is overcome by prolonged pressure. In *tabes dorsalis*, the abdominal crisis may simulate appendicitis, but, as in spinal arthritis, steady pressure causes relaxation. *Herpes zoster* of the last two dorsal or the first two lumbar nerves gives a pain which is continuous, intense and boring, but rarely colicky or intermittent. The hypersensitiveness is discovered to be in the abdominal wall. Incidentally it should be observed that the herpetic vesicles which appear on the third or fourth day should not be mistaken for the results of local applications made to relieve the pain. *Typhoid appendicitis* occurs usually in the first week of typhoid. The pain is similar to the early pain of appendicitis, but less severe. Inflammation of *Meckel's diverticulum*, if in the right iliac region, is difficult to distinguish from appendicitis. There is a less severe colic, and the pain is more that of localized peritonitis. *Perityphlitis* gives a pain with less colic than appendicitis, but with local tenderness and rigidity depending upon whether there is peritonitis or not. No rigidity usually means no peritonitis. *Appendicular colic* without inflammation gives the pain peculiar to appendicitis, but little or no real muscular rigidity. *Acute intestinal colic* does not present rigidity of the muscular wall. Many of the other following conditions require to be differentiated from appendicitis.

Thrombosis of the mesenteric artery is characterized by sudden excruciating pain in the mid-abdomen, with shock and the other signs of gangrene of intestine. It is one of the most severe of abdominal pains. The subsequent pain, if the patient survive, is that of intestinal obstruction and peritonitis. *Acute enteritis* may give pain, but not the

rigidity of peritoneal disease. The pain of appendicitis has also been confused with that of *right pneumonia* and *abscess of the right ovary*.

Acute intestinal obstruction begins with an acute colicky pain, coming and going in waves. The rigidity of the muscles does not appear until peritonitis develops. *Borborygmus* precedes pain waves. The above pain without fever, but with vomiting and localizable distention, indicates obstruction. The rumbling of the bowels and the belching of gas by mouth, along with the wave-like peristaltic movements of the intestine, which can be seen often through the abdominal wall, all preceding and running into the colicky pains, are characteristic of acute intestinal obstruction.

In the female generative organs many conditions produce abdominal pain. The painful *contractions of the uterus* which signal the beginning of labor are intermittent. At first they are short in duration, a minute or less, and feeble, with intervals of relaxation of half an hour or more. There is no contraction of the abdominal muscles or muscular rigidity. The early pains are described as cutting or grinding in character. As the cycles grow shorter the pains become more intense. They become stronger, longer, and the intervals shorten. The tenderness of *acute metritis* is distinctly localized in the uterus. *Salpingitis* and *oophoritis* cause pains referred to the lower abdomen. When fluid distends a tube or cystic ovary in the presence of acute inflammation the pain may be colicky, but usually it is continuous. Rarely at first it may be referred to the umbilical region and cause nausea, but the tenderness is always localized at the disease. As the peritoneum becomes involved the rigidity becomes more pronounced, but it is not apt to be so marked as in appendicitis. The pain and tenderness are lower and nearer the middle line than in appendicitis. The tenderness is apparent through the vaginal fornices.

Ectopic gestation gives a mild colicky pain as the tube distends. This usually is present for a week or two before the rupture of the tube takes place. The pain is in the lower abdominal region on one side. The rupture of the tube is accompanied usually with acute pain followed by the characteristic symptoms, the chief of which are due to the hemorrhage. In some cases the pain has been referred to the hypochondrium. When this phenomenon is on the right side, gall stone disease may be simulated. *Twisted ovarian pedicle* causes an acute pain which is continuous and not associated at first with rigidity of a marked degree. The pain is often described as of a sickening character. A tender tumor is usually palpable, which is easily determined not to be due to infection.

The pains arising from the urinary organs often involve the abdomen. A *distended bladder* has given pain which was mistaken for that of peritonitis. *Ureteral colic* is due to traumatism to the wall of the ureter usually by a distending body or by obstructed urine. *Calculus* causes an excruciating pain which is felt in the loin and lateral abdomen and radiates to the groin, scrotum or vulva, and penis. The pain suddenly ceases when the stone slips back into the pelvis of the kidney or enters the bladder. The abdomen is not rigid to palpation. *Renal colic* presents the peculiar kidney pain, usually referred in the same direction as that of ureteral pain.

Movable kidney causes pain when it produces a flexion of its pedicle. Angulation of the ureter or renal vessels causes a sudden severe pain similar to that of ureteral colic. It suddenly subsides when by change of position or from some other cause the kidney resumes a position which relieves the angulation. Dilatation of the renal pelvis by valve formation, angulation, or obstruction in the ureter may cause periodic pains not unlike those of chronic recurrent appendicitis. The pains have the kidney character; they radiate to the external genitals, are located more posteriorly than those of appendicitis, and the overlying abdominal muscles are not rigid. The dragging pain of movable kidney is that of a slight degree of angulation of the pedicle and traction upon the surrounded parts.

Cryptorchism, especially with orchitis or epididymitis, gives abdominal pain, which is low down in the groin, and often accompanied by the sickening sensation peculiar to traumatism of the testicle. *Periureteral abscess* and infections of the *vas deferens* may cause pain and tenderness peculiar to their location. The former disease on the right side is differentiated from appendicitis by the absence of colic. The rigidity is that of localized peritoneal involvement. Attacks of abdominal pain with apparent intestinal symptoms may in some instances be due to renal or ureteral calculus. These pains have been referred in instances to the mid-abdomen or hypochondrium.

The pain of *peritonitis* is peculiar. It differs in different parts of the abdomen and with different infections. Inflammation of the peritoneum is not in itself painful. The inflamed peritoneum is tender, that is, when it is pressed upon, which means stretched or traumatized, pain is experienced. The chief pain in connection with peritonitis is that which is referable to the intestine. When the peritoneum of the bowel becomes inflamed, the underlying muscle becomes infiltrated with inflammatory products and paralyzed. Localized intestinal paresis and intestinal obstruction are clinically the same, and the pain is due to

stretching of the inflamed peritoneum and to colic in the bowel immediately above the paralyzed segment. Thus there are two pains: the tenderness of the inflamed peritoneum and the pain of distended bowel which has not yet fallen into paresis, but which is destined to that fate. The infecting organism influences the pain by the amount of exudate and reaction which it produces. For example, the tubercle bacillus produces so little reaction as to give but slowly developing and slight peritoneal discomfort; the more virulent organisms, such as streptococcus, pyogenes aureus, and colon bacillus, usually produce a rapid paresis of bowel and the pain which accompanies it.

Besides the pains arising from organs in relation to the abdomen, there are referred pains, many of which are of a medical character, but all of which may be confused with surgical diseases. Among these may be mentioned *pneumonia*, *pleurisy* of the diaphragm, *lead colic* (which may simulate most any abdominal pain), *spondylitis* (affecting the nerves just as rheumatoid arthritis), and *tubies dorsalis* (with its gastric and intestinal crises and pains about the waist).

Hemorrhoids, sometimes when strangulated, produce an aching abdominal pain. The pain of *strangulated hernia* is that of acute intestinal obstruction. It is often referred to the umbilical region, although the tenderness is always at the site of strangulation. Infected post-peritoneal *lymphatic glands* sometimes give the tenderness and pain incidental to involvement of the peritoneum. *Torsion of the omentum* gives pain and tenderness which are not severe and which usually are associated with the palpable mass.

Sclerosis of the great vessels of the abdomen is not an uncommon cause of constant throbbing pain in old persons. This usually is observed in the iliac vessels or the aorta. It does not produce rigidity of the abdominal wall nor any especial tenderness, but the pain is persistent and intractable. *Aneurysm* of abdominal vessels produces pain by pressure upon nerves in adjacent structures.

Rupture of viscera causes slight pain at the moment rupture of the peritoneum occurs. Following this the pain depends upon the degree and location of the peritonitis which supervenes.

It should be borne in mind that no abdominal pain alone is pathognomonic. All of these pains must be considered along with the accompanying symptoms.—*The American Journal of Surgery*.

The Indications for the Mastoid Operation.

BY

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When one takes into consideration the pathological conditions present in purulent inflammation of the mastoid bone; when one keeps in mind the important structures immediately surrounding the middle ear; and when the dire consequences that may follow when operative interference has not been resorted to are fully understood, it becomes obviously important that the surgeon should know exactly when to perform the mastoid operation. However, we cannot well arrive at any conclusion in this matter without a resume of the symptomatology of mastoid inflammation.

There is perhaps no region in the human body where surgical procedure is employed which is in such close relation to so many vital points as the middle ear; above and separated from it by bone, which is often extremely thin, lies the brain and its meningeal coverings; anteriorly, and in close proximity, the carotid artery; behind, at no regular situation, the sigmoid sinus, extending below in the jugular vein; Internally, the facial nerve and the internal ear.

Here, if anywhere, one's surgical wanderings are truly beset by pitfalls, and here also is initiated the inflammatory process, whose extension into the adjacent parts renders so urgent the need of prompt and thorough operative interference.

It must be borne in mind that in mastoiditis we have to deal with an osteomyelitis of limited area and that while it may at times progress slowly with merely the obliteration of the mastoid cells by sclerosed bone it frequently destroys contiguous structures with fearful rapidity.

The mastoid has aptly been designated the appendix of the head and disease of these two parts is certainly attended by common phenomena. The surgeon who has done any considerable number of operations for appendicitis will frankly confess that in this disease there is no way by which he can, with any certainty, state the nature and extent of the pathological condition before abdominal section has been performed. In like manner, no surgeon can, with any confidence, assert what he will find before he has performed a complete mastoid operation.

Some apparently benign cases of mastoiditis present the greatest difficulties in the way of the operator while others seemingly malignant show merely the necessity for free drainage.

In the midst, then, of these uncertain conditions what cardinal signs exist, if any, by which we can be guided in our decision to operate or not to operate?

The temperature is an unreliable guide. Some severe cases accompanied by extensive caries have but slight febrile manifestations, while others with high fever show comparatively little involvement of the mastoid cells.

In two patients, both over 70 years of age, and both having profuse discharge and caries of the inner table, one at no time had a temperature of over 99.4° while in the other the fever rose to 104.6°.

Children are apt to have high fever, as also are those cases characterized by perforation of the floor of the mastoid and the formation of Bezold's abscess.

A case having a history of a discharge from a sinus behind the ear that has persisted for thirty years had a subnormal temperature. On operating I found the bone of ivory hardness, all cells but the antrum obliterated, and an epidural abscess.

It is my belief that the more rapidly the infection invades the mastoid cells the higher we will find the temperature curve, as such invasion is coincident with the general systemic infection which causes it, while in the more slowly developing cases the individual has in a measure reacted to the infective process in a general way, while the disease became localized in the non-resisting cells of the mastoid bone. The pulse conforms in frequency to the temperature.

Sweating, especially during sleep, generally indicates pus, and in the disease under consideration we have no exception to the rule. The expression of the countenance I do not regard as of any diagnostic value.

Suddenly appearing disturbance of equilibrium with nausea and greatly diminished hearing occurring during the course of a suppuration of the middle ear are symptoms which demand immediate operation, pointing as they do to involvement of the labyrinth, which is usually followed by panotitis, meningitis and death.

When we can diagnose mastoiditis by inspection of the parts involved no other means of diagnosis are necessary. However, one must not confound the glandular swellings so common in the exanthemata for a Bezold abscess. Careful palpation will usually remove all danger of this error.

The discharge from the meatus may be absent or profuse, with all variations between these extremes. But the rapid cessation or diminution of the discharge accompanied by increase of temperature, pain and

tenderness strongly indicates involvement of the cells and should put us on our guard at once.

Inspection of the canal, however, is of greatest value, as here we find a sign which when present is of such significance that its association with but one other sign of equal importance warrants us in operating at once. If, after having thoroughly cleansed the external auditory canal, we find just above and posterior to the tympanic ring a sagging or bulging of the membrane lining the bony canal and if this is associated with tenderness over the antrum of the tip of the bone or over the point of emergence of the emissary vein, there is no need of delaying in hopes of more definite evidence. By the time more evidence appears the patient may be in great danger of death.

Some writers express themselves as being skeptical of the value of a bacteriological examination of purulent discharge from the meatus on the grounds that such discharge becomes quickly infected with new pyogenic organisms after having drained from the middle ear. I take issue with them. Of course, if the pus to be examined has been taken from the outer ear or from the side of the neck after it has been exposed for some time to the external atmosphere it is obvious contamination by new bacteria should be expected, but if the patient's external auditory canal be syringed out with a sublimate solution, and cleaned carefully with alcohol, the patient's ear inflated so as to force new pus into the canal and the pus gathered by a sterilized carrier and then sealed until it gets into the hands of the bacteriologist, I fail to see why a bacteriological examination should not be worth as much as or even more than a culture taken from a throat in a case of suspected diphtheria.

The organisms causing suppuration of the middle ear are the staphylococcus, pneumococcus, streptococcus and influenza bacillus, although the infection is commonly mixed.

Although pneumococci cause the greater number of cases, streptococci are by far the more virulent and if these germs are present that alone is held by some to be justification for the operation.

So eminent an authority as Dench regards the blood count as valueless for diagnostic purposes, but I cannot concur in this opinion.

To attempt to diagnose mastoiditis by laboratory methods alone would be fallacious, but as collateral evidence I consider the blood count of much value. The fault with many observers lies, I think, in their interpretation of the blood count. The absence of blood changes is not proof that mastoiditis does not exist, and in this connection we must not forget that in the mastoid the osteomyelitis is quite walled off

in the bone, but if we correctly interpret them, certain blood changes are highly significant.

The mere fact that there is an increase in the number of white cells is not of great value, but when the percentage of neutrophils is raised I believe we have a symptom of importance. Nor am I alone in this opinion. One writer states his conviction that in the presence of a suppuration of the middle ear, if the neutrophils run as high as 73 per cent. we should operate. However, I would not advise operation without other evidence.

The character of the pain is held by some to be significant, a deep, dull heavy pain associated with indisposition on the part of the patient to move about being regarded as pathognomonic, but I have seen pain of this character on many other conditions that I give it small weight.

In my view we should get all the evidence possible, giving each item its due consideration, and then carefully sum up before we hand down our decision. Certainly any procedure which makes for more careful and more thorough investigation should not be lightly regarded.

But the point I wish to raise here is: are we justified in waiting for all of the cardinal signs of mastoiditis before advising the mastoid operation?

Let me ask, is the surgeon justified in waiting for an accumulation of pus in the abdominal cavity or until he is morally certain that his patient has a gangrenous appendix before he advises appendectomy? Is he not in fact under obligation to operate before these complications have occurred?

There can be no doubt that the mastoid cells are implicated in all acute inflammation of the middle ear, even when there is no discharge of pus from the meatus. Siebenmann says: "A spontaneous evacuation of purulent secretions which may have gathered in the complicated system of cells with narrow exits through a perforation or through the tube is impossible."

It would appear from this that treatment of an inflamed mastoid, other than surgical, would naturally be of doubtful value and, indeed, such is the case. Leeches, ice bags and general systemic treatment are said to be useful, but in such cases as are really benefitted by such treatment is our diagnosis of mastoid complication infallible?

However, I do not wish to be understood as decrying all attempts other than surgical to relieve either acute or chronic suppuration of the middle ear. Such treatment is at times of value, and an effort to relieve

the patient by these means is always to be made; but careful reading of the best authorities and one's own experience, if at all extended, will soon make one pessimistic as to what is really accomplished without the surgeon. Improvement or recovery in such cases, I believe, depends more upon the patient's powers of resistance and the severity of the infection than upon the local treatment.

But when by a perfectly safe surgical procedure we can bring about recovery in an inflamed mastoid with the cessation of all purulent discharge, what right have we to continue treating these conditions with peroxide of hydrogen and other archaic mendicaments?

I am sure there are those reading this who were taught that it was an improper thing to operate on appendicitis until it became of the fulminating variety. The view point has changed since then. Neither do we hear of as many deaths from appendicitis. When we have an inflamed ear we have an inflamed mastoid. When we have pus in the middle ear we have pus in the mastoid. How long shall we delay?

The patient's hearing deserves passing consideration. If, having ears to hear with, a man cannot hear, he is crippled to just that extent. And the sooner a mastoid operation is performed the more hearing will be preserved.

I am fully aware that the operator is at times confronted by various considerations, which are prone to bias his judgment as to the time when operative procedure should be initiated, but after reviewing the literature on this subject and in the light of my experience I am forced to believe that the mastoid operation should be performed as soon as mastoiditis can be diagnosed.

Certainly this operation is curative of suppuration of the middle ear without disturbance of audition unless the radical operation is performed, and even then it not infrequently improves the patient's hearing. In cases requiring the radical operation it not only removes the menace of impending mastoiditis but it is a true remedial agent, whereas the medical treatment of this affection is to say the least uncertain in its results, tedious in its duration, beset by many dangers, not only to the patient's welfare, but for the physician's reputation. If error must creep in, it is far safer for all concerned to operate too soon than too late.—*American Journal of Surgery.*

OPHTHALMOLOGY.

Ocular Disturbances in Pregnant Women.

Wilhelm compares the visual disturbances liable with retention of chlorids, the dropsical form, and with retention of urea,

the dry form. In the first type the visual disturbances are an amaurosis of sudden onset, which promptly subsides when elimination of the chlorids is once more under way; the ophthalmoscope shows nothing or merely a venous congestion around the papilla which disappears without leaving a trace. On the other hand, the distinguishing feature of the eye disturbances with retention of urea is the so-called albuminuric retinitis, the gravity of which is explained by the coincident uræmia or azotæmia. Even with severe symptoms of this kind, emptying the uterus generally causes their complete retrogression. In a typical case reported the patient was at the seventh month of her first pregnancy. She had had primary chronic nephritis as a child, and during the pregnancy the clinical picture of severe azotæmia gradually developed, with apathy, anorexia, pruritus, albuminuric retinitis and convulsions, with almost total amaurosis, while the cerebrospinal fluid contained 2.67 gm. of urea. Delivery was induced and the copious diuresis which followed seemed to wash out the retained nitrogenous bodies and the patient rapidly recovered. Sudden transient amaurosis was observed in two other cases reported, evidently due to chloridæmia and subsiding at once after spontaneous delivery. One of these patients had had eighteen, the other three eclamptic convulsions. Venesection was done in both cases. There were no convulsions after delivery.—*The American Journal of Ophthalmology.*

THERAPEUTICS.

Antipyrin Incompatible with Calomel.

In the *Journal of the American Medical Association* is given the upshot of certain experiments to determine the mutual reactions of these two drugs. In the presence of sodium bicarbonate the combination has led to awkward symptoms, so a mixture was prepared containing one part of calomel, three of antipyrin, and six of bicarbonate. On treating this mixture with water a bluish-grey residue is left, and a soluble mercury salt is found in the solution. This residue is partly composed of metallic mercury and of unchanged calomel, but some at least of the latter is converted into a mercuric salt. If an acid be present instead of an alkali the reaction does not occur. It appears that 2 grains of calomel in such a mixture as that first mentioned yield $\frac{1}{3}$ to $\frac{1}{2}$ grain of corrosive sublimate, a dangerous quantity in fact. If the salts were administered in a capsule the element of danger would no doubt be much lessened, since the acid contents of the stomach would suffice to prevent this reaction.—*The Hospital.*

Salicylates and Alkalies.

About six years ago Dr. Frey showed by experiments on animals, and also on himself, that albuminuria and casts, as a result of the administration of salicylates, did not occur except when the urine was acid. It appeared, therefore, from these observations that the renal irritation was not due to a general intoxication by the salicylate set free in an acid urine. Dr. Ehrmann has contested this view, as he has found that in dogs administration of considerable doses of bicarbonate of soda, sufficient to diminish the acidity of the urine, frequently caused albuminuria, without the intervention of salicylic acid. Dr. Glassgen has recently investigated the subject anew by observations on patients in the Strasburg clinic. In the first place he finds that the continuous use of salicylic preparations does undoubtedly give rise to albuminuria. Further, according to his observations, the administration of 10 grammes per day of sodium bicarbonate causes the complete disappearance of this albuminuria, which however returns as soon as the alkaline medication is omitted. As a general rule, Dr. Glassgen gives twice as much alkali as salicylates, but does not exceed 10 grammes a day. According to his experience, 6 to 10 grammes of bicarbonate of soda produce no undesirable symptoms and do not in any way diminish the therapeutic effects of the salicylates. They are especially indicated as a prophylactic measure in cases where the kidneys are already affected.—*The Hospital*.

Adrenalin for the Vomiting of Pregnancy.

FREUND has attributed certain phenomena observed in the pregnant woman to insufficiency of the internal secretion of the suprarenals. Two physicians of Modena have attempted to make use of this observation by treating the intractable vomiting of pregnancy with suprarenal extract. Despite their success, they have lacked followers, and the method has fallen into disuse. Dr. R. Robinson has, however, recently reported to the Academie des Sciences two cases in which, after failure of the ordinary methods of treatment, he made use of this extract with excellent results. He employed a 1 in 1000 solution of adrenalin, giving in one case 10 drops a day by the mouth for several days; in the other, the graver case, the same dose by hypodermic injections.—*Ibid*.

TOXICOLOGY.**A Case of Coffee-Poisoning.**

DR. BARDET recently reported to the Societe de Therapeutique a case of acute poisoning from coffee drinking. The amount of coffee taken by the patient corresponded at least to 0.70 gram of caffeine. The patient, a chronic dyspeptic with hepatic insufficiency, had always

been susceptible to coffee, especially when taken in the evening, and because of this failing had substituted caffeine-free coffee for the ordinary variety. Unfortunately for him, the night of the accident he had by a mistake been served with ordinary coffee, which he had taken with milk. His symptoms then were as follows: Very rapid heart-beat and pulse-rate; painful, scanty, and very infrequent micturition; considerable excitement, followed by profound prostration, the whole lasting for three days. The author, as the result of this observation, states that nervous dyspeptics, especially those with a tendency to become excited, should be very sparing in the use of coffee. Caffeine-free coffee, though perhaps less palatable, should be of great service in such cases.—*The Hospital*.

Acute Sulphonal Poisoning.

A CASE of attempted suicide by sulphonal, reported in the *West London Medical Journal* by Dr. H.S. Singleton, is noteworthy on account of the large dose swallowed and of a most important point in the treatment. A lady of thirty-eight swallowed 125 grains of sulphonal in 5 grain tablets; less than two hours later Dr. Singleton saw her, at the moment when a lay friend was about to administer hot brandy. This he was just in time to prevent, and the importance of his arrival, from the patient's standpoint, may be judged when it is remembered that the solubility of sulphonal is 1 in 450 in cold water, but 1 in 90 in alcohol. The treatment consisted of a pint of coffee which the patient had to be well roused to swallow, followed by apomorphine. Energetic stimulation with strychnine and frequent drinks of hot coffee with warmth resulted in improvement after about six hours. Subsequently an erythematous rash appeared on the face, but there were no other serious after-effects. The recovery seems to have been extraordinarily rapid after such an enormous dose; but probably the tablets had not been more than partly digested and absorbed when measures were taken for removing the poison from the stomach.—*Ibid*.

Cases and Comments.**Some Cases from the Hills.**

BY

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I.

Gunshot Wound of the Lung with Encapsulation of the Bullet.

Padmanabhan, Hindu male, aged about 28 years, was brought to the Dispensary for injuries said to have been caused by a wild boar. On

admission, the patient was in an exhausted condition and was breathing with great difficulty, the inspiratory process being accompanied by acute pain. This, he said, was due to a knock against the stump of a tree and I believed the story. On inspection I found a lacerated wound about two inches long and $\frac{1}{2}$ inch broad on the back of the left fore-arm, besides irregular abrasions all over the body. These injuries alone were not sufficient to cause the distressed condition of the patient who found it very uncomfortable either to sit up or lie-down. I examined the thoracic region of the patient once more and I came upon a small slit, about, one-sixth of an inch in length, over the lower half the fourth rib in the mid-axillary line. On making the patient lie on that side blood was found oozing out of the wound. The skin around the opening having been carefully purified, with a clean probe I separated the edges of the wound when a gurgling sound was heard with the respiratory movements. Air was actually escaping through the wound. On a very careful and limited exploration of the wound I found out that the lower border of the fourth rib to about $1\frac{1}{4}$ inches in length was crushed, and that the wound had involved the left lung. Now I questioned the patient about the cause of this wound and after great difficulty the following answer was elicited. The patient and an assistant of his who had a loaded gun with him went to the woods to cut some creepers and while they were cutting these a few yards apart from each other the former was suddenly attacked by a boar. Hearing the noise made by the patient his assistant ran up to the spot and shot the beast, but he missed his aim and the bullet hit the man on the left side of his chest. It was the fear, that some legal complications might arise, that prevented the man from giving out, at first, the real truth.

The patient was, without further loss of time, anesthetized and after purifying the part again the external wound was enlarged and the crushed piece of rib was removed. The bullet was deeply placed in the lung and was not readily accessible. As the bleeding had stopped no attempt was made to probe deep into the lung, lest I might dislodge the clots already formed in the pulmonary tissue, and restart the bleeding. For the same reason no irrigation of the wound was done. The suspicious part of the wound was sterilized with carbolic acid and dry antiseptic dressing was put on. The next day patient had a slight rise of temperature for which he was given diaphoretic mixture and a calomel purge. Temperature came down to normal the next day after which he had another rise on the eighth day when a purulent discharge from the wound was noticed. The wound was antiseptically washed, a drainage tube was inserted just long enough to drain properly, and the tube

was stitched in, and the usual dressings adjusted. The wound was rapidly healing and the patient was doing well when some indiscretion in diet brought on diarrhoea: Acid and opium mixture was given and the patient returned to his usual diet with sanatogen as an extra. The wound was healing very rapidly and the patient was gaining flesh. Now he was given a tonic mixture till he was discharged cured after remaining in the dispensary for a month and a half.

The size of the bullet was ascertained from a companion bullet the patient had. It was about $\frac{3}{4}$ inch long, slightly conical in shape and about $\frac{1}{2}$ of an inch in diameter at the base. It was made of iron. I saw the patient two weeks ago and he is enjoying perfect health.

II.

Gunshot Wound of the Neck and the Removal of the Slugs.

I was called in to see a man-Christian, aged about 30 years, admitted into the Moovattupuzha Hospital, about 12 miles from my station, for a gunshot wound of the neck. Though the requisition was marked very urgent, I was able to reach the place only after six hours of journey in a country cart the only mode of conveyance available in these parts, just as dusk was setting in. History of the case says that the wound was accidental.

On examining the patient I found an oval aperture $\frac{1}{2}$ inch by $\frac{1}{2}$ inch just over the internal border of the Sterno-mastoid muscle one inch and a half above clavicle. The part around the aperture was denuded of skin to about two inches in diameter. There was no aperture of exit but there was a swelling about $\frac{1}{2}$ inch by $\frac{1}{2}$ inch behind the neck, $\frac{3}{4}$ of an inch external to the middle line and $\frac{1}{2}$ inch higher than the plane at the level of the point of entrance in front. The right arm lay powerless at his side. Pulse was good 70 per minute and of good volume. Patient experienced slight pain during swallowing.

The patient was anesthetized and the back of the neck where the swelling was, was antiseptically cleaned. An incision about one inch and half was made the centre of the wound corresponding to the swelling. When the first layer of muscle was cut through, a distinct solid mass was felt. The incision was deepened when a blackened surface was exposed. The probe detected the presence of a metal piece which was removed by means of an artery forceps. The probe was again introduced and the direction it took, indicated a groove running downwards among the muscular fibres. A vertical incision was made about an inch in length from the lower edge of the first wound, and very deep

in the muscle was found another metal piece. With the aid of an artery forceps this too was removed. As the load contained only two slugs according to the patient's own statement, the wound was closed after due antiseptic precautions.

The slugs were made of iron about $\frac{3}{4}$ inch long cut square at both ends and the diameter is about that of No. 8 silver catheter.

The single aperture of entrance shows that the muzzle of the gun was not more than a foot away from the neck. The entire absence of any serious hæmorrhage gives a clear bill of health as far as the carotid artery and its large branches are concerned. The paralysed condition of the right arm points to serious damage to the brachial plexus. The wound is doing well. The paralysed arm is in the same state. Otherwise the patient is enjoying good health. He was removed by his relations to place him under native treatment for the paralysed arm.

III.

Snake-bite and Lauder Brunton's treatment.

Pathumma, a Mahomedan woman, aged about 25 years was brought to me at about 2 o'clock on Monday 7th August 1911 for snake bite received while she was engaged in weeding in a paddy field. She was bitten about 10 o'clock. When I saw her, the bitten leg was very much swollen and painful and the saliva was blood stained. There was a cold clammy perspiration all over her body and the pulse was weak. The fang wounds were on the inner side of the right foot one inch below the inner malleolus. Two ligatures, hand's breadth from each other, were applied round the leg and the fangwounds were freely incised with Brunton's lancet and Potassium permanganate crystals were rubbed into the incisions. She the wound was then bathed freely with warm water, massage and pressure being applied downwards and outwards as was suggested by Major Frost, I. M. S. A strong dose of stimulant mixture was then given and the patient's relations were advised to remove the patient to the dispensary. But they took her to her own house for the due performance of certain 'mantrams' by a Fakir. Though the patient suffered a great deal of pain for four or five days, she was confident that she was out of danger and made a good and rapid recovery.

As there was nobody near the woman when she was bitten by the snake, the latter escaped and identification was rendered impossible. But the signs and symptoms exhibited by the patient are in favour of the sting of a poisonous snake.

THE ANTISEPTIC.

SEPTEMBER, 1911.

Diabetes and the Ductless Glands.



THE subject of Diabetes Mellitus is always interesting to Medical men in this part of the world. And we consider it highly necessary to draw the attention of our readers to a very interesting address delivered before the Ontario Medical Association by Dr. Thomas B. Fletcher, M.B., of Baltimore, and published in the *Canada Lancet*. Dr. Fletcher discusses the relationship between the ductless glands and carbohydrate metabolism taking the pancreas, adrenals, thyroid and pituitary as the glands which have influence on carbohydrate metabolism.

He accepts the well-known Claud Bernard theory of the glycogenic function of the liver, and says that in the normal individual at all hours of the day there is glucose circulating in the blood ranging between 0.1 and 0.15 per cent and 0.1 and 0.2 per cent. Any surplus glucose is stored up in the liver and muscles as glycogen and is slowly reconverted into glucose and given up to the system as the latter demands it. It is supposed that the ultimate combustion of the carbohydrates takes place in the muscles. But, if from any reason the percentage of glucose in the blood reaches more than 0.2 per cent we get a condition of hyperglycæmia and the excess passes over into the urine and produces either a temporary or permanent glycosuria. In marked cases of glycosuria the percentage of glucose in the blood reaches as high as 0.5 to 0.7 per cent. This hyperglycæmia may be the result of over-production, or what is more likely, a deficient combustion of glucose. The explanation of the occurrence of this hyperglycæmia is what Dr. Fletcher tries to get out of the study of the action of the ductless glands.

He takes the pancreas first and discusses the various researches connected with the relation of pancreas and diabetes. And from the results of such well-known workers as Minkowski, von Mering, Lepine, Opie, and Otto Cohnheim arrives at the conclusion that the part of the pancreas known as Islands of Langerhans produce an internal secretion

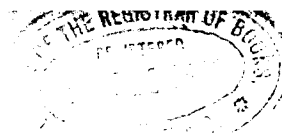
which is necessary for the combustion of the glucose. And when the Islands of Langerhans are destroyed by disease and their secretion thereby stopped the glucose is not properly burned up with the result that glucose accumulates in the blood more than 0.2 per cent and glycosuria results.

Taking next the thyroid gland, Dr. Fletcher, after a very lucid discussion of the effect of hyperthyroidism and hypothyroidism on carbohydrate metabolism comes to the conclusion that increased activity of the thyroid decreases the power of the carbohydrate destroying mechanism as proved by the occurrence of glycosuria in Grave's disease, and decreased activity of the thyroid has the opposite effect as proved by the fact that glycosuria seldom occurs in myxœdema. Thus it is seen that the pancreas and thyroid mutually retard the action of one another.

He next takes the adrenals and points out that adrenalin has also an antagonistic action to the internal secretion of pancreas. Injection of adrenalin produces glycosuria. This antagonistic action of adrenalin and pancreatic secretion has been utilized by Lepine to ascertain the condition of the pancreas in diabetic patients. If adrenalin is applied to the eyes of a patient and if the pupils dilate, then we must be strongly suspicious that the Islands of Langerhans are either destroyed or functionally inactive.

And lastly he deals with the pituitary gland. It is the posterior lobe of the pituitary gland that has any effect on carbohydrate metabolism. Here again increase of pituitary secretion is supposed to produce glycosuria and absence of pituitary secretion to favour increased tolerance of carbohydrate. And Dr. Fletcher winds up this most interesting discourse with a statement that it is his conviction that eventually it will be shown that most, if not all, of the cases of diabetes are due to absence of the special internal secretion of the pancreas or to interference or retardation of its function by the active principle of some one or other of the various ductless glands.

All this is very interesting, but we are no nearer a successful treatment of this mysterious malady which is so destructive in this country.



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Original Articles.

* THE MERCURIAL TREATMENT OF SYPHILIS.

BY

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 "Syphilology and Venereal Disease."*



It is not known with certainty when mercury was first employed in the treatment of syphilis. According to Dabry,† it was used by the Chinese 5,000 years ago, but this statement rests upon somewhat doubtful evidence. At any rate, we know that it was recommended by Jean de Vigo and Jacques de Bethencourt at the time of the great epidemic of syphilis at the end of the 15th century.

Since then mercurial treatment has oscillated from one extreme to the other. At one time it was carried out with such vigour that patients not unfrequently succumbed to the effects of mercurial poisoning or to weakness caused by the profuse salivation, which was then considered to be essential. In fact, at that time the treatment was often worse than the disease. This led to the opposite extreme, and to the doctrine of the non-mercurial school of treatment. Eventually a middle course was adopted, and the modern treatment of syphilis with moderate doses of mercury was established on a scientific basis.

I will now proceed to discuss the relative merits of the different methods of mercurial treatment. The method of fumigation may be left aside, as it is seldom used now; so that the three methods we have to consider are ingestion, inunction, and injection.

* Specially contributed to *The Antiseptic*. + *La Médecine chez les Chinois*.

Ingestion, or administration by the mouth is certainly the most convenient method, and, in the opinion of many syphilologists, one which is sufficient for the majority of cases of syphilis. At some of the recent discussions on the treatment of syphilis at various medical meetings the partisans of the other methods of treatment (injection or inunction) have made disparaging remarks concerning the method of ingestion, to which they contemptuously refer as the "pill treatment." They describe this method as inadequate, as trifling with the disease, etc. Some have said that cases treated by this method were more liable to develop tertiary syphilis later on. It has also been said by one observer that chronic syphilis of the tongue was a common result of the pill treatment.

Now, in answer to the detractors of this method I would point out that treatment by ingestion is not limited to pills, but consists in the judicious administration of different preparations of mercury and iodides in various combinations and alternations. For example, in the early stages of syphilis it is my usual practice to give the biniodide of mercury and potassium in the form of a mixture till the symptoms have disappeared. After this I put the patient on a course of pills—green iodide, hydrarg. cum creta, pil. hydrarg., or mercuric chloride, according to circumstances. It is well to give the green iodide in the early stages, and the others later. The two pills containing metallic mercury are the best for the continuation of treatment for prolonged periods.

Secondly, I would draw attention to the fact that the two syphilologists who have probably treated the greatest number of cases of syphilis—Sir Jonathan Hutchinson and Professor Alfred Fournier—have employed the "pill treatment" in the great majority of their cases. Yet, the proportion of tertiary syphilis occurring among their patients treated in this way compares favourably with that after treatment by other methods. Furthermore, as these eminent syphilologists have enjoyed an unusual span of active life they have been able to follow up their cases to an extent that is denied to most of us, and have shown that the proportion of tertiary syphilis occurring after proper treatment by internal medication is small. In fact, the most reliable statistics bearing on the frequency of tertiary syphilis—those of Fournier—are based on cases which have, for the most part, been treated in this way. These statistics show that the incidence of tertiary syphilis depends not so much on the method of mercurial treatment as on the duration thereof; the more prolonged the treatment, the less the liability to tertiary symptoms.

This brings us to the question of the proper duration of treatment.

In former years six months' mercurial treatment was considered sufficient. Later on, Hutchinson proposed a course of two years; Fournier increased this to four years, and other authorities have recommended five years or more. Fournier has also advised further courses of treatment during the fifth and seventh years, with a view to lessen the liability to parasymphilitic affections, such as tabes and general paralysis. Personally, I do not think we can fix any arbitrary limit to the period of treatment. There are some cases of syphilis for which two years is probably amply sufficient; on the other hand, there are cases which require several years' treatment. A great deal depends on the constitution of the patient and on his habits. For instance, a patient whose power of resistance is diminished by tuberculosis or chronic alcoholism will probably suffer far more severely from syphilis than a patient of sound constitution and temperate habits. However, the question is not so simple as this, for, some men of apparently robust constitution sometimes contract syphilis in a severe form. The reason for this is not apparent; there must be some predisposing condition, but the nature of this is unknown. It does not appear to be due to any especially virulent form of virus, for both mild and severe cases of syphilis have been shown, by the method of confrontation, to arise from the same source of infection. Finger has suggested that the individuals most liable to severe forms of syphilis are those whose ancestors have been most free from the disease.

As regards the time when treatment should be commenced, there is an almost universal consensus of opinion in favour of beginning treatment as soon as the diagnosis is established. In the case of a doubtful chancre, for instance, if spirochaetes are found in the sore (the best method is by means of dark-ground illumination) treatment should be commenced at once; but if spirochaetes are not found it is well to wait for the appearance of the roseola or other signs of secondary syphilis. The experienced eye can, no doubt, tell whether a chancre is syphilitic or not in most cases, but there remains a certain proportion of cases in which it is difficult or impossible to state definitely whether the sore is syphilitic, unless spirochaetes are found in it. Some sores, which never show the clinical appearance of syphilitic chancres, are followed in due course by secondary syphilis. The Wassermann test does not help us much in such cases, for it does not give a positive result in the early stages of the syphilitic chancre. It is true it may give a positive result before the secondaries have appeared, but it is better to wait for them to appear than to treat the patient for syphilis solely on the strength of a reaction, the nature of which is at present unknown.

to keep the carbide in place. This dressing must be accurately applied, but it is not desirable to fill the vagina so tightly as to retain the acetylene gas, which causes discomfort. An anæsthetic is not required for these procedures which are rather of the nature of dressings than operations. There is little or no pain and nothing to alarm the patient, who must be kept in bed in order that the dressing may not be displaced. After a fortnight's treatment the improvement is such that occasionally cicatrisation of the raw surface ultimately occurs.

The caustic properties of calcium carbide also render it suitable for the destruction of malignant ulcers or cavernous angiomas in situations requiring special care, such as the eyelid. It is well then to pass some body, such as a plate of glass, suitably moulded, between the eye and the lids, which may be closed by a temporary suture or sealed with collodion. The lesion having been exposed and the surrounding skin protected, fine flat flakes of carbide are applied and maintained by a dressing. The patient must retain an attitude which will avoid the risk of liquid or powder entering into the eye.

Carbide may be successfully applied to the treatment of the larger cavernous angiomas and many other conditions which require cauterisation. After 15 years' experience of calcium carbide no other substance of this class has given the writer such good results.—*The Medical Review*.

Tuberculous Cervical Glands.

W. SAMPSON HANDLEY, M. S., F.R.C.S.—The point of entry of the bacilli in most cases is through the tonsils or the naso-pharynx, for in a large majority of cases the glands first attacked are those at the angle of the jaw. The appearance of the swellings may be so sudden as to suggest mumps, but the swelling does not extend upwards behind the ramus of the jaw. A septic condition of the pharynx and naso-pharynx is a predisposing cause. This is shewn by the not infrequent onset of tuberculous glands soon after an acute exanthem. In some cases a carious tooth appears to be the point of entry for as an exception the largest glands may be found in the submaxillary region in association with decaying teeth, or an operation scar in this region may represent the originally affected group of glands.

As in phthisis both lungs are usually affected, but one more than the other, so tuberculosis of the cervical glands is usually *asymmetrically bilateral*. The glands are enlarged on both sides, but on one side deci-

dedly more than on the other. Attention does not seem to have been drawn to this point, which is valuable in diagnosis, especially in distinguishing tuberculosis from lymphadenoma. Large, elastic, mobile glands of the type described as lymphadenomatous not infrequently prove to be tuberculous. If the character of bilateral asymmetry is marked the diagnosis of tuberculosis is highly probable.

The Spread of Tubercle in the Cervical Glands.—The commonest type of spread is a descending infection of the glands within the carotid sheath, outside the internal jugular vein. Often by the time the glands first infected have reached a considerable size and have begun to soften, a chain of enlarged glands, gradually diminishing in size, has extended down to the level of the sterno-clavicular joint. From this main route of infection two side chains branch off. One is constituted by the submaxillary glands, which now become enlarged; the other chain extends downwards and backwards across the posterior triangle of the neck and is continued to the axillary glands.

Extension to the axilla is often regarded as a diagnostic point against tuberculosis and in favour of lymphadenoma. But tuberculous enlargement of the axillary glands is a not infrequent late result of tuberculosis of the cervical glands. Usually tuberculous axillary glands subside without causing trouble, though probably many cases of tuberculous subpectoral abscess arise in this way. The following case shews how the axillary infection may remain latent for years, and may yet have a remote importance.

A young woman presented on the right side of the neck the old scar of an operation during childhood for tuberculous glands. No enlarged cervical glands could be felt, and there had been no axillary trouble whatever until recently, when she had a whitlow on one of the fingers of the right hand. The whitlow was treated in the ordinary way and completely healed, but the axillary glands enlarged during the acute stage, and continued to do so after its subsidence, until they formed a large adherent mass of the size of a small orange. Upon removal this mass was found to contain foci of suppuration, and presented large areas of typical tuberculous caseation. The secondary infection ascending from the septic finger lighted up afresh the latent and quiescent tuberculous foci in the axilla, which had descended years before from the cervical glands.

In a somewhat similar case a woman aged 33, stated that when a child she had enlarged glands on both sides of the neck—worse on the left side. The glands ran downwards on each side along the neck and

added to or substituted for mercury. I may mention that the beneficial action of iodides is not confined to the tertiary stage of syphilis as is generally taught. Iodides are useful in every stage of syphilis, especially when mercury seems to be losing its effect; combination or alternation of iodide with mercury will then often effect the desired result.

To sum up:—(1) Routine methods of treatment should be avoided, and each case of syphilis should be treated according to the nature of the case and the circumstances affecting it; (2) mercurial treatment should be commenced as soon as diagnosis is established; (3) mercurial treatment should be continued, with short intervals of rest if necessary, for several years, the number of years varying according to the nature of the case, but never being less than two; (4) the majority of cases of syphilis can be successfully treated by the administration of mercury by the mouth, although a preliminary course of 6 weeks' inunction is desirable whenever this can be carried out; (5) the most energetic and at the same time the safest of the intensive methods of mercurial treatment is the method of inunction; (6) mercurial injections are indicated when, for some reason or another, inunction cannot be carried out; the soluble injections are more quickly absorbed and safer than the insoluble injections, although calomel injections are useful as an intensive form of treatment in certain special conditions.

In the present state of our knowledge there is no drug which can replace mercury in the treatment of syphilis. The recently introduced organic preparations of arsenic, including the notorious "606," only produce temporary healing of syphilitic lesions and do not eradicate the disease itself. Moreover, these preparations are all liable to give rise to the various effects of arsenical poisoning, which may have disastrous and even fatal results.

* SURGICAL CALAMITIES.

BY

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One of the most important advantages of a long association with large hospitals is the opportunity afforded to profit by the observation of one's own and other people's mistakes. Thus one learns just what surgical measures are safe, and what are not. One hears far more in books and magazine articles of the surgeon's successes than of his calamities. For

* Specially contributed to *The Antiseptic*.

this reason the fireside conversation of a group of hospital residents is sometimes a more valuable education than the publications of their chief!

It may serve as a useful warning to set down here a heterogeneous collection of surgical catastrophes, more or less serious, which have come under the notice of the writer in the course of some twelve years at various London and provincial hospitals with which he has been connected, and to point the moral in each case. He feels that he ought to apologize to the reader for calling attention to such elementary precautions of common sense, but possibly a hint may save a professional reputation somewhere.

A healthy man once entered a hospital suffering from a rupture of the ligamentum patellæ following a stumble. An operation was decided upon, and after careful sterilization of the skin it was performed with skill and efficiency. A little blood flowed down into the recesses of the knee joint, and this was washed out by pouring in warm normal saline from a boiled jug. The saline was kept in the Theatre in a Winchester quart glass-stoppered bottle, made up to double strength, and boiled by the dispenser as soon as made. It was diluted with an equal volume of boiling water at the time of using, which at the same time reduced it to the proper strength and brought up the temperature to a little above body heat, without wasting any time. A few days after the operation severe suppuration ensued; the knee joint became acutely inflamed and full of pus. It was opened up and a tube inserted. Later, pyæmic abscesses developed in other joints and in the kidney, and repeated operations became necessary. The patient was desperately ill for weeks, and used to curse the surgeon who had operated on his knee whenever he went round the ward. To every one's surprise, however, he recovered, with the knee useless and flexed at a right angle. About a year later he came in again to have the leg amputated.

There can be little doubt that the infection was introduced by the saline solution. There were convincing reasons for excluding all other possible sources. The error lay in trusting to the efficiency of a glass stopper in keeping virulent bacteria out of a boiled saline solution kept for weeks after sterilization on a shelf in the Operating Theatre. From that time forward, the saline for emergency use has been kept after boiling in flasks with wool stoppers sealed over by tin foil, and reboiled from time to time. This method has been found completely trustworthy. One need scarcely say, of course, that when the need for saline solution is foreseen, it is better to make it at the time, to boil it and then to wait until it is cool enough to use.

Another group of calamities that come to mind are concerned with surgical treatment based on a wrong diagnosis. There are two main conditions of the greatest importance, which may be diagnosed as ordinary surgical ailments with disastrous results. On one occasion a man came up to the Accident department with what appeared to be a boil on his arm. It was rather a large one, and had a dark, almost black, sloughing centre. It was fomented, and he was told to continue the same treatment at home and to return if not improved. When next seen he was dying. The so-called boil was really a malignant pustule of anthrax. It is very important never to look at a boil or carbuncle showing either a dark centre or a ring of vesicles, without asking oneself, "could this possibly be anthrax?" The diagnosis can of course be decided by looking for the organisms.

The other rare but important condition referred to was illustrated by a patient who was treated some years ago in a Bristol hospital, whose case has passed into a salutary warning tradition. He came up complaining of a painful swelling at the back of the leg. This was red, œdematous, and very tense, and seemed to be infiltrating the muscles of the calf. The history was of a week's duration. Most fortunately, the man was admitted, and the apparent cellulitis submitted to operation by an experienced surgeon with plenty of assistance. As soon as the incision was made, out burst not pus, but a tremendous gush of blood, and it was at once obvious that he had to do with an inflamed and leaking aneurysm. The thigh was rapidly controlled by a tourniquet, and after a long and difficult operation the posterior tibial artery was tied above and below the aneurysm. It needs but little imagination to realize the difficulties of dealing with such a case, if one had started to make incisions single-handed, under gas! The moral is to feel for pulsation and look for ecchymosis in every swelling which appears to be an abscess, lest by any chance it should be an aneurysm.

This very day the writer has seen an autopsy that illustrates a very important point in practical surgery, none too well known. An old man was admitted for an abdominal tumour, which proved to be a distended bladder consequent upon enlarged prostate. A catheter was passed, and the urine drawn off. A few days later he developed uræmia and died. At the post mortem, the ureters were found to be much dilated, and bloody effusion had taken place into the dilated renal pelvis. It was one of those cases in which it is very unwise to draw off all the urine. Some should always be left in the bladder in an old man with great distension.

A long chapter could be written on the vagaries of drainage tubes. I well remember an early warning on the subject soon after qualification, when attached as casualty officer to a large hospital. A girl had been attending for weeks with an abscess of the axilla which refused to heal for no apparent reason. At last she declared that one of the nurses had put in a rubber drainage tube, and that she did not think it had ever been taken out. I explored the sinus, and there, sure enough, was an inch of tube! It so chanced that we had another girl attending at the same time with another obstinate axillary abscess; so we decided to explore her also, and extracted another inch of drainage tube! From that time forth it has been a cardinal rule for oneself and all one's subordinates that every drain must be fixed, either by a stitch, a safety-pin, or a long hanging loop of thread. Even the safety-pin is not enough if the wound is a large one. I once had to spend half an hour fishing with long forceps inside the pleural cavity of a boy with empyema, in which some one had foolishly trusted to a three-inch safety-pin to anchor the tube, and pin and all had disappeared inside, only to be located by the X-rays. Of course all empyema tubes ought to be fixed by a tape passing round the chest. I recollect an autopsy on a patient with empyema who had wandered from hospital to hospital, in whose chest three separate tubes were found!

The only case in which I have ever seen a swab left in a wound was in a patient whose breast was removed for cancer; the swab was put in at the last moment, after the nurse had counted. The moral is plain.

It is of the very greatest importance to deal cautiously with patients suffering from abdominal injuries. In a fair proportion of the cases they do not at first appear to have anything much the matter with them, and the pulse is scarcely ever over 100 after rupture of a viscera unless the sufferer is dying. Therefore we should insist on keeping such a person at rest and under observation for at least two hours before giving any positive opinion. I have known lives lost by the neglect of this rule.

Probably we have all seen a very vexatious little accident, liable to occur when the patient is bandaged under an anæsthetic: I refer to the inclusion of a fold of the skin in the pin which fixes the bandage. The pin should never be passed until the fingers of the bandager are underneath the bandage to protect the patient.

Ridiculous as it seems, it is quite important in a hospital to adopt some means to show on which side a hernia is situated. Several times I have seen a difference of opinion after the patient was anæsthetized

as to whether the right or left side was at fault, and once the wrong side was cut down upon. Fortunately the injured ring on the affected side is usually decidedly larger, and of course the mistake can only arise when several cases are done every operating day.

A surgeon courts disaster if he does not make it a rule to see all cases of fracture again on the next day after first putting up. Not only may the apparatus have slipped or otherwise proved insufficient, but there is very real danger of serious constriction of the parts on account of late swelling. Less than 24 hours' tight splinting may suffice to bring on Volkmann's ischæmic contracture, and sometimes the patient or his parents take no notice of the pain and dusky swelling of the extremities. Bandages or strapping that were not at all too tight when first applied may easily become so on account of progressive effusion into the tissues.

Lastly, most of us have seen after some years of experience a patient or two whose fingers will not stand carbolic acid dressings, and carbolic gangrene results. Cut fingers should never be wrapped up in gauze soaked in any stronger carbolic lotion than 1 in 60, and perhaps it is better to avoid this chemical altogether in such cases.

Our Contemporaries. MEDICINE.

Hiccough—Treatment of.

In most cases of hiccough a physician is not summoned until all the ancient family remedies—the swallowing of ice, salt, lemon-juice, vinegar, strong spirituous liquors; holding the breath a minute or two; traction on the tongue for several minutes; taking large draughts of water while holding the breath—have been tried and proved futile. The spasm remaining unrelieved, musk, in a dose of 5 to 10 grains (0.3 to 0.6 gm.) in a solution of starchwater, may be tried; it should not be employed more than once or twice, however, as beyond that its power becomes almost *nil*.

If there be gastric or intestinal irritation one should not hesitate to use an emetic or purge.

In the severe cases the following procedures may be resorted to with success: Lavage, passage of the esophageal sound, prolonged pressure over the abdomen and epigastrium, forcible traction on the tongue, abdominal massage, constriction around the lower thorax, cold

or hot pack, applications of blisters on each side of the cervical spine over the roots of the third, fourth and fifth nerves. The following internal remedies have been suggested and used: Nitroglycerin, cocaine, spirit of chloroform, codeine, tincture of capsicum, spirits of camphor, tincture of valerian, amyl nitrite, jaborandi, asafoetida, the bromides, etc. Morphine, hypodermically, is not of much value, as the effect is short-lived.

Ether narcosis is always best in cases of hysterical origin, the spasms seldom recurring after return to consciousness. Faradization or galvanism is often the last resort, and is of no value unless applied by experienced hands. Application must always be made over the epigastrium or the phrenic nerves.

When the hiccough has persisted to the point of exhaustion and the patient's life is jeopardized, the following must be given by rectum, to be repeated if necessary: Potassium bromide, ʒj (4 gm.); tincture of opium fʒss (2 c.c.); water, enough to make fʒviiij (240 c.c.). The induction of sleep is generally attended by cessation of the hiccough.

Hiccough accompanying uremia is best treated with the hot pack, preceded by a hypodermic injection of strychnine.

Postprandial hiccough is usually of a chronic type, especially among hearty eaters. Attention to the diet is of prime importance. The bowels should be kept open and moderate exercise prescribed. Tincture of *nux vomica*, with one of the mineral acids, also proves helpful.

Surgical intervention is necessary in cases where hiccough is secondary to abscess formations, malignant and other growths. *H. D. King.*

In cases of hiccough caused by hysteria, epilepsy, shock, and cerebral tumors, as well as in the idiopathic cases associated with gout, diabetes, and Bright's disease the action takes place more or less directly through the respiratory centre; in irritative and inflammatory conditions of organs in relationship to the diaphragm, the action is more or less directly on the muscular nervous structure of that organ and thus, by reflex, through the cord.

In the treatment of the nervous, either hysterical or epileptic, the following may prove effective: Mixed bromides, gr. xxx (2 gm.); chloral hydrate, gr. x (0.6 gm.); syrup of lemon, q. s. To be taken in one dose. Where the case is of pure hysteria, apomorphine, 1/8 grain (0.008 gm.), hypodermically, would bring about relaxation during vomiting, followed by the sedative action of the morphine.

In the cases associated with gout, diabetes, Bright's disease or toxemia, eliminatory measures—catharsis, bowel washing, steam baths, hot packs, etc.—must be used. Pilocarpine in large doses depresses the respiratory center, and where hiccough is caused by uremia this drug, in $\frac{1}{3}$ -grain (0.02 gm.) dose, may be employed with excellent results.

After anæsthesia, abdominal hiccough may become troublesome. Often small quantities of ice or champagne quiet the spasm, or, again, sips of hot water and the assumption of the right lateral decubitus bring relief.

In hiccough due to gastritis or some irritant to the stomach, the following is useful: bismuth subnitrate, gr. xx (1.3 gm.); cerium oxalate, gr. iv (0.25 gm.); cocaine hydrochloride, gr. $\frac{1}{8}$ (0.01 gm.). To be taken in one dose.

Sometimes obstinate hiccough is relieved, when the patient is strong, by having him hang, with the arms extended, from some beam or pole so that the feet do not touch the floor, and with all the abdominal muscles tense hold his breath as long as possible. Another method of treating the irritative form of hiccough is to extend the patient fully across the bed and have traction made on both extremities by attendants, while ethyl chloride is sprayed over the epigastrium.

When hiccough is associated with flatus, a bowel wash of soapsuds and turpentine combined is often efficacious, and where the distention is great the turpentine stupe often works like magic.

Morphine, while efficacious when given early, may hide the real cause of the hiccough and thus bring disaster to the physician in making the diagnosis of some abdominal condition. All inflammatory or irritative conditions that might become dangerous should be eliminated before using it—*Monthly Cyclopaedia & Medical Bulletin*.

Diabetes Mellitus

TREATMENT.

Drug therapy discussed. Opium should be used only in the rare nervous cases or where all else has failed. Dose, 0.03 gm. ($\frac{1}{2}$ grains) *t.i.d.*, gradually increased to 0.5 gm. ($\frac{7}{2}$ grains) for from 1 to 3 weeks. Disadvantages: Effect temporary, does not establish sugar tolerance, and may lead to habit. Bromides or antipyrin can generally be substituted for opium, even for nervous symptoms—arsenic ordinarily preferable. Given as

Howler's solution in ascending doses until mild toxic effects appear, then gradually reduced. Especially indicated in severe cases, combined with diet; valuable in neurotic debilitated subjects. Does not increase sugar tolerance. Effects less evanescent than with opium. Hexamethylenamine, 5 grains three or four times a day, improves glycosuria and increases tolerance for sugar, but should not be used in severe cases without proper diet. Atropine methylbromide, $\frac{1}{8}$ grain *t.i.d.*, gradually increased to $\frac{1}{4}$ grain, or atropine sulphate $\frac{1}{16}$ grain, gradually increased to $\frac{1}{8}$ grain, well adapted to milder cases. Glycosuria often diminished and carbohydrate tolerance increased. Tincture of belladonna seemed best tolerated. Sodium bicarbonate, in quantities sufficient to make urine neutral or slightly alkaline, indicated when large amounts of acetone or ammonia occur in urine. Put patient on carbohydrates, *e.g.*, oatmeal, potato. Milk diet perhaps still better.

Soy bean found a valuable addition to the dietary in 8 cases. Caused marked diminution in percentage and total quantity of sugar passed. Contains little or no starch, but much protein. Preparation of beans: Soak 12 to 16 hours, stir till skins rise to surface and can be removed; boil in salt water or with bacon until soft, and season. Soy-bean flour also serviceable, used as a gruel, in broths, or in muffins. In making latter, use 1 part of wheat flour to 5 of soy flour.

Sodium citrate preferable to sodium bicarbonate in treatment of acidosis, avoiding anorexia and gastro-intestinal disturbance. Its taste allows of its being given with food or in lemonade. Amounts up to 50 grams ($1\frac{1}{2}$ oz.) a day given by author. In diabetic coma, might be given intravenously, adding small amount of citric acid to give a neutral solution for injection.

Oatmeal diet best method of treating acidosis. In new cases with some toxemia it is the best food to use for a few days, leading the way to other methods. If continued over a week without intermission however, tends to cause, especially in children, diarrhoea or severe constipation, usually with severe tympanites. Method of employment: Put 11 ounces of dry oatmeal in 3 pints of water, slightly salted, and cook for, at least 6 hours. While still hot, strain through sieve, when, if cooking has been thorough, only coarse covering of kernel will remain on sieve. Finally, add 5 ounces of butter and stir in. Patient takes the total amount daily in equal fractions (about 7 ounces) every two hours, or in larger allowances less frequently. No other food to be permitted except a little black coffee or brandy.

Taka-diastase found to alleviate symptoms in 5 cases. Also generally decreases amount of sugar for a time. Given in powder form in capsules, 5 grains after meals and before retiring. Dose reduced or increased from time to time as required.

In 2 cases of traumatic diabetes in children use of fresh vegetables and the von Noorden gruel resulted in raising strikingly tolerance for carbohydrates and in reducing degree of acidosis.—*Monthly Cyclopædia & Medical Bulletin*.

The Demonstration of Hydrochloric Acid in the Stomach by Auscultation.

E. SCHUTZ.—It has recently been claimed by Fuld that the presence of HCl in the stomach can be demonstrated by auscultation of the gastric region immediately after the administration of a solution of soda. The writer has employed the method in about 100 cases. A test breakfast is given and an hour later $\frac{1}{2}$ dr. (2 gm.) of bicarbonate of sodium dissolved in $1\frac{1}{2}$ oz. (50 c.c.) of water is administered. A small portion of the gastric contents was previously obtained by syphonage in order that the results of chemical analysis and of auscultation might be compared. It was found that auscultation with the patient in the erect posture gave more reliable results than in the supine. In the latter the results of chemical analysis and of auscultation frequently disagreed. In the former the fizzing due to the evolution of CO_2 was usually plainly heard. This probably depends on the fact that the sounds are loudest at the surface of the fluid and are consequently easily appreciated when the fluid is in close proximity to the abdominal wall, but become indistinct when a layer of gas is interposed. The ear should be placed directly on the skin immediately after the administration of the alkali and the position of greatest intensity of the sounds determined by rapidly examining the whole of the upper part of the abdomen. If the acidity is less than 15, fizzing sounds are indistinct or entirely absent, but with higher degrees of acidity they are frequently loud and persist for some minutes. The lower limit of the stomach may often be determined with some accuracy as the sounds cease more or less abruptly below this spot. Extreme rigidity of the abdominal wall or obesity may vitiate the results even in the presence of marked hyperacidity.

Fuld's test is thus less reliable than direct chemical examination, as a negative result does not exclude the presence of free HCl. But as a positive result appears to be conclusive evidence of the presence of free

HCl this simple method is distinctly valuable. The sounds which arise owing to fermentation of the gastric contents are quite distinct from those due to the evolution of CO_2 and are readily recognised. Even lactic acid appears to give rise to no fizzing sounds, and thus cannot be mistaken for HCl.—*The Medical Review*.

SURGERY.

Calcium Carbide in Surgery.

L. DRSGUIN.—Calcium carbide, well-known commercially as "carbide," is used for the production of acetylene gas for illumination. Owing to its affinity for water it is sold in air-tight tins in the form of black, irregular fragments. In presence of water it is decomposed into quicklime and acetylene, thus:— $\text{C}_2\text{Ca} + \text{H}_2\text{O} = \text{CaO} + \text{C}_2\text{H}_2$. Heat is produced which may be sufficient, under certain conditions, to ignite the gas or even cause an explosion of the mixture of gas and air. In using this substance for surgical purposes the flat scale-like fragments must be selected. The coarse powder formed by the smaller fragments may also be used but the finer powder at the bottom of the tin consists of slaked lime formed by efflorescence and is inert.

The carbide has no action on the intact skin so long as it remains dry, or better, is covered with a layer of vaseline or collodion. When applied to a raw surface, whether bleeding or suppurating, it decomposes, forming quick-lime in a nascent form (which rapidly becomes slaked) and giving off acetylene gas. The part becomes cauterised, the extent of the action depending on the thickness of the fragment applied and the time it is in contact with the tissue. The residue of the fragment of carbide adheres closely to the wound by its deep surface but the more superficial parts crumble and are easily detached by a stream of liquid. The adherent mass should not be detached, as when forcibly removed its intimate connection with the slough causes bleeding. The action is not painful but rather analgesic, although carbide applied to a surface devoid of epidermis causes a brief burning sensation which may be cut short by applying a moist tampon. This tendency to incrustation renders carbide unsuitable for hastening the cicatrization of healthy wounds, but its value consists in its selective action in cauterising the morbid elements and sparing the healthy tissue. When first suggested as a surgical application, by Guinard in 1896, its effects were ascribed to the acetylene liberated, but the writer has demonstrated experimentally that this gas has no beneficial action and the pain obser-

ved in Guinard's cases was probably due to its retention by the dressings. Apart from the temporary smarting, the analgesic properties of carbide are of value and present advantages over formol, which, though used for similar purposes, is a painful application and difficult to control. Carbide is antiseptic and has valuable hæmostatic properties, while its caustic action is selective; it attacks fungating parts, soft granulations and tissues containing much blood and young cells, rather than parts which are muscular, fibrous and healthy.

When first introduced by Guinard the application of carbide was restricted to inoperable cancer of the cervix uteri, where it proved of value in arresting hæmorrhage, but its indications have been much extended by the writer. It is an excellent means of cleansing chronic callous ulcers of the leg as well as other ulcers such as those on the scalp or the result of bed-sores. The surrounding skin is well scrubbed with soap and nail-brush and is dried. A compress of lint sufficient to overlap the ulcer is covered with a layer of some simple ointment free from water and that part of it which is to be applied to the raw surface is covered with a layer of coarsely granular carbide. This is accurately applied to the ulcer and kept in position by a suitable dressing. The dressing is renewed in one or two days after irrigation with boiled water, but without any attempt to remove the adherent remains of the carbide. The surrounding skin must be carefully dried. Usually after two dressings the wound assumes a more healthy appearance and after the third application a definite margin of cicatrisation may often be observed.

In inoperable malignant tumours of superficial parts a time comes when caustics become necessary. Calcium carbide presents many advantages as it is not poisonous like arsenic, not liable to melt like potash or Vienna paste, and not painful like formol or arsenious acid, while it is more active and rapid in action than chloride of zinc. In ulcerated tumours the carbide is applied to the wound, but in the case of recurrent nodules in a scar or in large sarcomata with unbroken skin, it is necessary to remove the epidermis over the most superficial portion of the tumour before commencing treatment. The skin surrounding the ulcer is carefully cleansed with soap and water applied with tampons of gauze rather than with a brush. The skin is then carefully dried and protected, if necessary, by a layer of some ointment free from moisture. Suitable fragments of carbide having been selected these are arranged on the raw surface commencing with the bleeding points. When the development of the gas is brisk it is necessary to hold the fragment in position for a moment till it adheres, and care must be taken not to work

by the light of a naked flame; the only safe artificial light is an incandescent electric lamp. It is well not to fatigue the patient by applying too many fragments of carbide at the first dressing. An accurately adjusted bandage is applied to maintain the substance in position. The dressing is removed in a day or two and the parts are freely irrigated with tepid saline solution to remove the non-adherent portions of lime. Those fragments which adhere to the sloughs will become spontaneously detached with them. Fragments of carbide are then applied to any unhealthy parts not previously treated, the surrounding skin being dried and no attempt being made to cauterise the parts beyond the limits of the ulcer. It is important to avoid dressing materials which retain moisture; thus lint and gauze are to be preferred to cotton wool and no oiled silk, gutta-percha tissue or jaconet must be used. The best dressing is that which best retains its position and on removal in a few days it should be perfectly dry, its dryness being the test of its efficacy, as it is also the determining factor as to the frequency of renewal in any case. After several dressings the wound assumes a more healthy appearance, ceases to bleed, and becomes free from fœtor, while the tumour becomes flatter so that the fragments of carbide penetrate under the sound skin gradually attacking the deeper parts. By continuing the treatment progressive destruction of the growth takes place with cicatrisation from the margins as in an ordinary ulcer.

In neglected cases of cancer of the cervix uteri, carbide is valuable either as a preparatory treatment before radical operations, or as a palliative in inoperable cases. In the proliferating form, or cauliflower tumour, the site and connections of the growth are recognised and the parts washed with soap and water applied with a tampon of gauze assisted by copious irrigation. The mass of diseased tissue may now be rapidly removed by a large sharp curette, applying fragments of carbide to the raw surface, which arrest the hæmorrhage and disinfect the ulcer which remains. It then becomes possible to decide whether a radical operation is advisable and a considerable proportion of these cases are submitted to vaginal hysterectomy. In more advanced cases the danger of opening fresh channels of infection has led the writer to avoid the use of the curette. Long pointed fragments of carbide are chosen and forced into the tumour and maintained by a dressing. In the form of cervical cancer in which the disease has eroded the cervix the curette is inapplicable, and the treatment consists in applying flat fragments of carbide to the ulcerated surface. To avoid injury to the vaginal walls these must be carefully dried. Then a ring-shaped pad of dry gauze is packed round the cervix and a few tampons are inserted

to keep the carbide in place. This dressing must be accurately applied, but it is not desirable to fill the vagina so tightly as to retain the acetylene gas, which causes discomfort. An anæsthetic is not required for these procedures which are rather of the nature of dressings than operations. There is little or no pain and nothing to alarm the patient, who must be kept in bed in order that the dressing may not be displaced. After a fortnight's treatment the improvement is such that occasionally cicatrisation of the raw surface ultimately occurs.

The caustic properties of calcium carbide also render it suitable for the destruction of malignant ulcers or cavernous angiomas in situations requiring special care, such as the eyelid. It is well then to pass some body, such as a plate of glass, suitably moulded, between the eye and the lids, which may be closed by a temporary suture or sealed with collodion. The lesion having been exposed and the surrounding skin protected, fine flat flakes of carbide are applied and maintained by a dressing. The patient must retain an attitude which will avoid the risk of liquid or powder entering into the eye.

Carbide may be successfully applied to the treatment of the larger cavernous angiomas and many other conditions which require cauterisation. After 15 years' experience of calcium carbide no other substance of this class has given the writer such good results.—*The Medical Review*.

Tuberculous Cervical Glands.

W. SAMPSON HANDLEY, M. S., F.R.C.S.—The point of entry of the bacilli in most cases is through the tonsils or the naso-pharynx, for in a large majority of cases the glands first attacked are those at the angle of the jaw. The appearance of the swellings may be so sudden as to suggest mumps, but the swelling does not extend upwards behind the ramus of the jaw. A septic condition of the pharynx and naso-pharynx is a predisposing cause. This is shewn by the not infrequent onset of tuberculous glands soon after an acute exanthem. In some cases a carious tooth appears to be the point of entry for as an exception the largest glands may be found in the submaxillary region in association with decaying teeth, or an operation scar in this region may represent the originally affected group of glands.

As in phthisis both lungs are usually affected, but one more than the other, so tuberculosis of the cervical glands is usually *asymmetrically bilateral*. The glands are enlarged on both sides, but on one side deci-

dedly more than on the other. Attention does not seem to have been drawn to this point, which is valuable in diagnosis, especially in distinguishing tuberculosis from lymphadenoma. Large, elastic, mobile glands of the type described as lymphadenomatous not infrequently prove to be tuberculous. If the character of bilateral asymmetry is marked the diagnosis of tuberculosis is highly probable.

The Spread of Tubercle in the Cervical Glands.—The commonest type of spread is a descending infection of the glands within the carotid sheath, outside the internal jugular vein. Often by the time the glands first infected have reached a considerable size and have begun to soften, a chain of enlarged glands, gradually diminishing in size, has extended down to the level of the sterno-clavicular joint. From this main route of infection two side chains branch off. One is constituted by the submaxillary glands, which now become enlarged; the other chain extends downwards and backwards across the posterior triangle of the neck and is continued to the axillary glands.

Extension to the axilla is often regarded as a diagnostic point against tuberculosis and in favour of lymphadenoma. But tuberculous enlargement of the axillary glands is a not infrequent late result of tuberculosis of the cervical glands. Usually tuberculous axillary glands subside without causing trouble, though probably many cases of tuberculous subpectoral abscess arise in this way. The following case shews how the axillary infection may remain latent for years, and may yet have a remote importance.

A young woman presented on the right side of the neck the old scar of an operation during childhood for tuberculous glands. No enlarged cervical glands could be felt, and there had been no axillary trouble whatever until recently, when she had a whitlow on one of the fingers of the right hand. The whitlow was treated in the ordinary way and completely healed, but the axillary glands enlarged during the acute stage, and continued to do so after its subsidence, until they formed a large adherent mass of the size of a small orange. Upon removal this mass was found to contain foci of suppuration, and presented large areas of typical tuberculous caseation. The secondary infection ascending from the septic finger lighted up afresh the latent and quiescent tuberculous foci in the axilla, which had descended years before from the cervical glands.

In a somewhat similar case a woman aged 33, stated that when a child she had enlarged glands on both sides of the neck—worse on the left side. The glands ran downwards on each side along the neck and

extended forwards into the submaxillary triangle. She had no enlarged glands in the neck, and she sought advice for a lump in the left axilla which she had noticed for the past 12 years. It was not painful and it varied in size from time to time. On examination the lump was found to consist of three greatly enlarged glands. In the right axilla were a few slightly enlarged glands. The history gave a clue to the diagnosis, and left no doubt that the axillary glands were tuberculous. The case also shews that tuberculous glands should not be operated upon unless they display a tendency to break down. In many cases tuberculous glands disappear when adult life is reached, if not before.

Treatment.—The prophylaxis of tuberculous glands requires more study. The boiling or sterilization of all milk given to a child is the most obvious method; but the antiscorbutic properties which the boiling destroys can be only partially made up in other ways, as by the administration of orange juice. The rational method is to ensure that no tuberculous cow is used as a source of milk. Air-borne infection is more difficult to combat, though doubtless the notification of cases of phthisis is a step in the right direction.

If tuberculous glands are seen early, before there is any indication of softening or suppuration, climatic and open-air treatment should be tried if possible before an operation is considered. The reputation of Margate and Ramsgate in this are well deserved; but probably an open-air country life in any fairly bracing locality is nearly as efficacious. A sea-voyage is rarely practicable in the case of children, but it may be very successful, probably because irritation of the throat by infective particles of dust is entirely obviated.

This raises a point in treatment which is frequently neglected, namely, a systematic attempt to cleanse and render as aseptic as possible the throat and naso-pharynx. The tonsils and the posterior wall of the pharynx should be painted thrice daily with a non-irritant antiseptic, such as Glyc. Acidi Borici or Glyc. Hydrarg. Perchloridi. The naso-pharynx should be irrigated daily through the anterior nares with a weak alkaline thymol solution, a few drops of the solution being instilled into either nostril by a syringe or an irrigator. The writer has not found tuberculin of any value.

Syrup of Iodide of Iron seems to be the best internal treatment in summer or in fat children when cod-liver oil in combination with iron is unsuitable. External treatment to the enlarged glands is apparently useless unless there is tuberculous infection of the overlying skin, when iodoform ointment may do good.

The principal advance of late years in the operative treatment of tuberculous glands lies in the recognition of the fact that the presence of a sinus or of a glandular abscess does not preclude a radical operation for the removal of all the affected glands. Even though an extensive wound has to be made, and although tuberculous pus may unavoidably come in contact with the freshly-incised tissues, failure of primary union or tuberculous infection of the wound during the operation need not be feared. It is of course necessary to excise all infected skin round a sinus. The escape of tuberculous pus upon the wound surface must be prevented as far as possible, and the wound irrigated with 1 in 2,000 perchloride before it is closed. Drainage is unnecessary if the glands have been clearly removed, and not simply scraped out. If any tissue which looks tuberculous must be unavoidably left behind, the suspected area should be rubbed over with zinc chloride solution, 20 gr. to the ounce, and then drainage may be advisable.—*The Medical Review.*

Biot's Breathing in Meningitis.

PROF LEWIS A. CONNER.—In 1876 Camille Biot described in the *Lyon Medical* a form of breathing, which he considered characteristic of meningitis, especially of the tuberculous form. It differed from Cheyne-Stokes respiration in that, instead of the respirations gradually diminishing before the pause and increasing after it, they became deep dyspnoeic, corresponding to deep sighs. This form of dyspnoea has received little attention from subsequent writers. During the past 2 years the writer has made a graphic study of pathological types of breathing, and found Biot's breathing in 6 out of 30 cases of meningitis. Its characteristics were as follows:—1. Periods of apnoea which vary in length and occur at irregular intervals. 2. Constant irregularity in the rhythm and depth of individual respirations. 3. The frequent occurrence of deep sighs. 4. In spite of the variations of the depth of inspiration the position of the chest at the end of the expiration, remained constant. This seemed to be due to the fact that the expiration is purely passive, the active muscular expiration, frequently present in various forms of dyspnoea, being absent. In contrast to this the breathing in a case of fatal anuria showed great irregularity in the level of expiration, the ascending (expiratory) limb of the tracing being carried above the mean expiratory level in consequence of active muscular efforts during expiration. The scanty literature of the subject shows that Biot's breathing is supposed to occur not only in meningitis but in other cerebral conditions, and it is sometimes described as "cerebral breathing." But, in many other diseases studied,

including a number of cerebral ones, such as hæmorrhage, thrombosis, syphilis, and various forms of coma, the writer never found Biot's breathing. In 4 out of the 6 cases of meningitis the disease was tuberculous, in 1 due to the streptococcus pyogenes and in 1 to the diplococcus intracellularis. Four of the patients were children and 2 adults. In 4 of the cases the irregularity was noticed a few days after the onset of symptoms. It may therefore be an early and important symptom of meningitis. It was seen in deep coma and in states of only slight drowsiness and apathy.

Biot's breathing may be further contrasted with Cheyne-Stokes breathing. The dominant feature of Cheyne-Stokes breathing is the rhythmic succession of periods of apnoea and periods of dyspnoea. The apnoeic pauses in a given case are uniform in length and occur at regular intervals. The periods of dyspnoea are all composed of about the same number of respirations which regularly wax and wane. The characteristic feature of Biot's type, on the other hand, is the absence of any sort of rhythm. The periods of apnoea vary in length and occur at irregular intervals, and there is constant irregularity in both the rate and the force of the individual respirations. Such essentially different types of breathing must, it seems, have a different pathogenesis. Among the cases of Biot's breathing here reported well-marked Cheyne-Stokes respiration was observed only once; it replaced the former type during the last 2 or 3 days. G. A. Gibson, of Edinburgh, in a comprehensive study of Cheyne-Stokes respiration, accepts the conclusion of Marckwald that periodic breathing can occur only when some of the higher brain centres have ceased to exert their influence on the automatic centre in the medulla, and suggests that Cheyne-Stokes breathing may require total abolition of such influence, while the meningitic or cerebral type may result from the irregular discharge of unequal impulses.—*The Medical Review*.

Auto-Serotherapy.

PROF. I. LEMANN.—Autoserotherapy, or the therapeutic use of the patient's own serous exudations, was introduced by Gilbert in 1894. In cases of pleural or peritoneal effusion 1 to 10 c.c. of the serous fluid are aspirated, and the needle is withdrawn only as far as the subcutaneous tissue, where the fluid is injected. The usual result is diuresis and rapid absorption of the effusion. In the case of tuberculous effusions the effect has been attributed to tuberculin in the fluid and in other cases to antibodies. The writer has employed the method in the following cases:—

A man, aged 29, had acute left pleurisy with effusion reaching to the level of the eighth rib. On the eleventh day 15 c.c. of straw-coloured fluid were withdrawn, of which 7½ were injected subcutaneously. No local or general reaction followed, and the effusion completely disappeared in 4 days.

A boy, aged 19, had chronic parenchymatous nephritis, with anasarca, ascites, and left hydrothorax. After failure on other methods auto-serotherapy with 7½ c.c. of fluid was practised. Marked diuresis immediately followed. The hydrothorax and oedema disappeared in 3 days and the ascites more slowly.

A man, aged 58, had hepatic cirrhosis with ascites for 8 years. During the first few months he was repeatedly tapped, and then epiploexy was performed. For 8 years he was comparatively comfortable but had persistent ascites. Three injections of 5 to 10 c.c. of ascitic fluid were given and followed by diarrhoea but not by diuresis. The abdomen diminished in circumference from 91·2 to 84·2 cm.

A man, aged 47, had cirrhosis of the liver with ascites and oedema of the legs. He had been tapped twice. The abdomen measured 95·5 cm., and the urine amounted to 4 pints in the 24 hours. Four c.c. of fluid were withdrawn and 2 were injected. After the second day the quantity of urine passed daily rose to 8 pints. On the twelfth day large quantities of blood were vomited, the ascites had practically disappeared, and the abdomen measured 81 cm.

A man, aged 38, had cirrhosis of the liver which was supposed to be due to syphilis. Auto-serotherapy was practised thrice without any effect on the ascites.

In a case of tuberculous pleurisy with consolidation at both apices the treatment also failed.

These cases confirm the view that the good effect of auto-serotherapy is due to the diuresis. But why diuresis should be produced has not been explained. The most extensive series of cases of auto-serotherapy has been published by Marcou, who has employed the method in 82 cases with uniform success. He used it in all cases of pleurisy with effusion and hydrothorax, no matter what the cause, the only condition being that the fluid was nonpurulent. He watched the patients for 2 to 4 years after the injection, and did not observe any cases of generalised tuberculosis—a contingency anticipated by some. However, such very favourable results have not been obtained by others.—*Interstate Medical Journal*.

Fracture of Clavicle.

Treatment.—Posterior figure-of-eight plaster dressing recommended. Patient dressed in gauze or cotton undershirt. Sheet cotton wadding placed over shoulders and scapulæ, and a few turns of it carried around through axillæ. Plaster-of-Paris bandages $2\frac{1}{2}$ or 3 inches wide then applied in form of an X, letting upper poles extend over top of shoulder and well down on its anterior aspect, while lower poles reach angles of scapulæ. Drop dressing lower on injured side, to grasp scapula well. Carry every fourth layer down anterior surface of shoulder and back through axilla, thus molding plaster dressing about shoulder. Keep shoulders in desired position while plaster is hardening.

Diagnosis.—Procedure useful in doubtful cases described. Stand behind patient, who is seated, place thumb or index finger of each hand on corresponding clavicle, without exerting pressure, and, beginning at sternal ends of bones, gradually move fingers symmetrically outward along clavicles while patient repeats "ninety-nine." If there be a complete fracture the palpable fremitus, normally of equal intensity on the two sides, is lost or greatly lessened at point of fracture and beyond.

—*Monthly Cyclopaedia and Medical Bulletin.*

Gonorrhea.

Treatment.—Solution of 2 or 3 drams of iodine tincture in 1 quart of normal saline found useful for irrigation in acute urethritis.

Atropine sulphate, 1 mgm. ($\frac{1}{8}$ grain) in a suppository, used twice daily, recommended to relieve spasm in urethral and peri-urethral muscles. If marked prostatic congestion, add 0.10 to 0.25 gm. ($1\frac{1}{2}$ to 4 grains) of potassium iodide. In using protargol instillations into posterior urethra, addition of 1 c.c. (15 minims) of 1:1000 atropine solution useful.

Internal.—1. Sandalwood oil to be prescribed with care, because often deranges digestion and causes back pains. 2. Bromides or hyoscyamus internally, sometimes suppositories of belladonna, cannabis indica, and opium or cocaine, to control painful micturition. 3. Alkalies 10-grain doses of sodium bicarbonate and extract of buchu, taken with hot water between meals. 4. Laxatives when necessary.—*Local:* 1. Abortive, seldom practicable. Where slight burning on urination, reddening of meatus and slight discharge of not more than 24 hours' duration, with clear urine in second glass: After patient has urinated and cleansed glans and foreskin, wipe out meatus and first inch

of urethra with cotton dipped in distilled water. To same depth apply 10 per cent. cocaine followed by sterile water. Then similarly insert freshly made 1 per cent. silver nitrate, glans penis being gently massaged at same time. Repeat procedure next day, using slightly stronger silver solution. On third day, if no bleeding or marked increase of irritation, use Kollmann dilator in first inch or two of urethra, massaging as before, and follow with 2 per cent. silver nitrate. 2. Routine treatment: If patient seen within 72 hours of onset and urine shows only anterior urethra involved, gently irrigate, with a soft-rubber constrictor about penis, anterior portion only with fresh, warm 1:8000 potassium permanganate, using about a liter. After thorough flushing inject 1 or 2 drams of 1:2000 permanganate; retained 5 or 10 minutes. If posterior urethra involved, remove constrictor and repeat process posteriorly. Treat thus once daily until discharge such as to indicate use of an astringent hand injection. If symptoms aggravated, cease the treatment and insist on rest in bed with hot rectal douches and sitz baths, until subsidence. Discharge generally disappears in 10 to 15 days. Patient then permitted to use astringent injections, such as zinc phenol-sulphonate, bismuth subgallate, glycerin, etc., at bedtime only and with careful technique.

Stock gonococcal vaccine in small doses used with benefit in about 50 cases of acute gonorrheal urethritis, in 4 cases of gonorrheal pyosalpinx, 2 of gonorrheal rheumatism, and 1 of gonorrheal conjunctivitis. Dosage: 2 minims of a vaccine containing 50,000,000 bacteria to the c.c., injected at 1 week intervals. Dose increased only in obstinate cases. No reaction should be produced at any time. All cases of urethritis but one were freed from discharge within 3 weeks. Make injections into gluteal muscles, perpendicularly to skin.

For gonorrheal urethritis and cystitis in women: 1. Dietary restrictions and interdiction of alcohol. 2. Free use of water. 3. Mild salines (2 drams of sodium phosphate in glass of Vichy each morning before breakfast). 4. Scrupulous cleanliness of external genitalia. 5. Salol and hexamethylenamine, of each 10 grains (0.65 gram) *t. i. d.* 6. Irrigations of lower urogenital tract with saturated boric acid solution in acute cases; iodine ($\frac{1}{2}$ to 1 dram of tincture to a quart of water) in subacute and chronic cases. Bladder to be first emptied and urethral crypts freed of secretion by gentle massage. For irrigation use Valentine apparatus or ordinary fountain syringe with suitable tip. To irrigate urethra alone, have reservoir only 2 or 3 feet above level of patient; if cystitis also present it should be higher. A quart of warm solution (100° to 104° F.) generally suffices. Irrigate daily until gonococci

disappear, then every other day until 10 consecutive negative specimens obtained. *Monthly Cyclopædia and Medical Bulletin.*

Hypertrophy of the Breasts.

H. CAUBET—This is a rare condition of which the writer has observed one case, and has collected 25. It occurs about the age of puberty and appears to be an exaggeration of the normal development of the breast at that period. While some have assigned a preponderating influence to menstrual disturbances the writer considers irregularity or suppression of menstruation as rather a consequence than a cause of the hypertrophy. In the writer's case the patient was a girl aged 11. Menstruation had not been established and remained absent after the removal of the mammæ. Her mother had suffered from a similar condition and had been treated by removal of the breasts. The condition is usually bilateral and the breasts may attain enormous dimensions. In a case recorded by Manec, in a girl aged 17, the breasts hung down to the pubis and covered the whole abdomen. The circumference of the right gland was 72 cm., of the left 75 cm., while each weighed about 8 kgm. The onset may be insidious but the progress is rapid, the breasts attaining their full size in a few weeks or months. Though painless the condition is not devoid of danger from its great demands on nutrition. As there is no tendency to spontaneous regression and other means have proved useless, removal is the only treatment. The operation presents no difficulty as there are no adhesions and it is advisable to reduce the loss of blood by emptying the organ as far as possible. Both breasts should be removed at the same time. Usually recovery is rapid, the patient's general condition rapidly improves, and menstruation becomes re-established. In several cases pregnancy has followed without incident. Histological examination of the organs shows a pure hypertrophy with some passive oedema. The connective tissue is thickened and increased in quantity but there is also hypertrophy of the glandular elements with increased formation of new acini of normal type.

We have previously reported, with an illustration, the most extraordinary case on record, in which the right breast weighed 12 kgm., and the left 28 kgm.—*The Medical Review.*

Disinfection of Wounds by Iodine.

C. F. NIEDER.—The writer used tincture of iodine to prevent infection of slight abrasions on his hands when treating infectious

cases. The inflammation which sometimes occurred previously was prevented almost invariably and the abrasions healed quickly. He then used iodine in treating minor wounds with excellent results.

The following are some examples:—

A boy stepped on a rusty nail puncturing the ball of the foot through to the skin on the top. When seen on the third day the foot was much swollen and painful. A small incision was made on the back of the foot and a small ear curette was passed entirely through the wound, cleaning out particles of dirt. A narrow strip of gauze was twisted, dipped in tincture of iodine, and passed through the wound. Next day the pain and swelling were gone. The gauze was left in another day when it was removed and recovery was rapid.

A boy had his palm badly lacerated by a blank cartridge. The wound was cleaned out, pieces of wadding being removed from between and even behind the metacarpal bones. The wound was swabbed out with iodine. An immunizing dose of tetanus antitoxin was given. Rapid recovery followed.

A man received a bullet wound through the thickest part of the hand while cleaning a revolver. Particles of skin were removed from the wound at point of entrance. A narrow strip of gauze saturated with iodine was passed through between the metacarpals from the point of exit and allowed to remain 2 days, when it was drawn part way through, allowing the wound of exit to close, and next day was removed entirely. He returned to work 5 days after the accident.

A bullet wound of hand had been treated for 3 weeks by irrigation with peroxide and packing with gauze. It was then discharging pus freely from both entrance and exit. It was swabbed out with tincture of iodine and promptly healed.

Care must be taken in applying iodine to large wounds, as it might be sufficiently absorbed to cause poisoning. The chief objection to the use of iodine is the sharp burning sensation produced, but this lasts only a short time. Disinfection can be more readily effected by swabbing with iodine than with solutions of bichloride or carbolic acid and healing is more prompt. Punctured wounds caused by nails, etc., should be treated by enlarging the opening through the skin, cleaning out the wound with a small ear curette and introducing a narrow strip of twisted gauze dipped in iodine and allowing it to remain 2 or 3 days. All through-and-through bullet wounds of the extremities, where the course of the missile can be followed with a probe, should be treated by passing a narrow strip of gauze saturated with iodine and allowing this to

remain 2 to 4 days. In treating wounds requiring sutures the skin along the edges of the wound is painted with iodine, thereby preventing stitch abscesses.—*New York State Journal of Medicine*.

Amebic Colitis—The Copper Salts and Ipecacuanha in the Treatment of.

Not feeling satisfied with the results obtained with ipecac in this affection, and mindful of the excellent results reported by Moulden from the use of hot instillations of copper sulphate, and of his own previous experience with copper arsenite in other intestinal disturbances, the author made a comparative study of the efficiency of these remedies in 45 cases, divided into 3 series of 24, 8, and 13, respectively.

All the patients were given early every morning, from five to ten days, 30 c.c. (1 ounce) of a saturated solution of magnesium sulphate, with the object of washing from the mucous membrane by exosmosis as many of the amebæ as possible and clearing out all digestive residue as a preliminary to drug treatment.

The first series of cases was given ipecacuanha in salol-coated pills. The initial dose, administered at 8 P. M., ranged from 40 to 80 grains, and the total quantity given from 200 to 630 grains. The dose was reduced 5 grains nightly until on examination the stools showed freedom from the *Entamoeba histolytica*, and this dose then continued several days thereafter. The author lays stress on the fact that, although under ipecac treatment the stools are lessened in number and become formed, the drug does not eradicate the entameba at all times, even though given in large doses and long continued. In this series of 24 cases there were 6 cases of true relapse, with reappearance of the entameba in the stools—i. e., 25 per cent.

The patients of the second series were given ipecac as in the first series, and in addition, during the daytime, copper arsenite, 1/100 grain (0.00067 gram) in tablet form, was given every hour until 6 or 8 doses had been administered, and thereafter every four or five hours so long as the ipecac was being used. Morning and evening high instillations of hot copper sulphate solution were also given. The entamebæ, likewise mucus and blood, invariably disappeared from the stools in from six to twenty days. Although these cases were under observation for more than two months, there was no recurrence of the entamebæ and only one doubtful relapse (mucoid stool)—a percentage of 11½.

The third series of patients received the same treatment as the second, with the exception that the ipecac was omitted. The time required to

eradicate the entameba and free the stools of mucus varied from five to twenty-five days. Of the series of 13 patients, 11 had their stools examined off and on for periods of six to ten weeks. No case had relapsed in these periods. The other two patients disappeared too early to be of statistical use. Counting them as doubtful relapses, the percentage in this series was 15½.

The method of administering the hot instillations of copper sulphate is described by the author as follows: The patient is placed upon an inclined plane that raises the buttocks 25 cm. (10 inches) above the level of the shoulders, thus allowing for complete distention of the entire colon, especially at the cecum, where the organisms are usually present in large numbers. The colon is thoroughly irrigated through a double-flow colon tube with sterile water until the return is perfectly clean. After draining off all the surplus water the bowel is slowly filled with the hot copper solution, starting with the reservoir on a level with the anus and slowly elevating it as the gut accommodates itself to the pressure, thus distending it to its fullest capacity without contraction of the muscular walls. The temperature at which the instillations prove most efficacious is from 106° to 110° F. (41.1° to 43.3° C.), the higher temperature being used, as a rule, in the worst cases. This temperature seldom causes annoyance, but, on the contrary, acts as a sedative to the mucus membrane, improves the penetrative power of the copper, and brings about reaction. The patient usually retains the solution for twenty or thirty minutes. The procedure is repeated every twelve hours.

Under this treatment the patients gain rapidly in weight. Profuse perspiration frequently occurs, but no unfavorable results follow. The strength of solution used in the cases reported was from 1:10000 to 1:6000, though more lately, in cases where the amebæ and mucoid stools failed to disappear rapidly, the author has been increasing the strength up to 1:2000 without ill effects.—*Monthly Cyclopædia & Medical Bulletin*.

OPHTHALMOLOGY.

The Condition of the Iris in the Diagnosis of Intra-Ocular Disease.

MALCOLM L. HEPBURN, M.D., F. R. C. S.—In the rush of general practice it often becomes necessary to diagnose quickly by means of the fewest possible signs. The ophthalmoscope and other methods of

examination require such skill that, without considerable practice, the difficulties are almost insuperable. Examination of the iris, without any special instrument may often afford the clue to many diseases of the eye.

I. *The reaction of the pupil.*—The value of this reaction is often lessened by a faulty method. Arrange the patient in front of a window so that both eyes are equally illuminated, and examine each separately in exactly the same way, commencing with the right. Cover the left eye with the right hand, so as to exclude all light. Then shade the right eye with the left hand so that although the light is almost entirely shut out the pupil is still visible; the right pupil will dilate somewhat. On removal of the left hand, the pupil ought to contract immediately and briskly (direct action to light), indicating that the reflex arc from the right retina through the right optic nerve to the centre and back through the right third nerve to the iris is intact. The right hand should then be removed from the left eye, when the right pupil ought to still further slightly contract, showing that the reflex arc from the left retina and optic nerve to the centre and back through the right third nerve is also intact (consensual action to light.)

Sometimes immediately the left eye is covered the right pupil dilates fully, or almost fully, showing that whatever contraction existed before was sustained by the light stimulus acting through the left eye and, therefore, that the light-conducting mechanism to the brain of the right eye is faulty in some part of its course (=disease of retina, optic nerve, or tract). This conclusion is confirmed if the direct action to light is also absent.

If the right pupil acts directly to light, but fails to respond consensually, there is some defect in the light-conducting elements of the left eye (*i.e.*, retina, optic nerve, or tract). This is confirmed by repeating the examination on the left eye which has been carried out on the right.

Perhaps the right pupil fails to act both directly and consensually, remaining permanently in a state of dilatation. This signifies that the right third nerve is paralysed, and perhaps the light-conducting elements of the same or both eyes (*i.e.*, mydriasis, glaucoma), and is known as "the fixed dilated pupil"—a well-known sign in ophthalmology.

Finally, the reaction of the pupil to accommodation should be tested. If the Argyll-Robertson pupil is present, the suspicion of some defect in the light-conducting elements of both eyes is confirmed.

One of the most valuable and, at the same time, delicate tests is the presence or absence of *maintenance of contraction* when light is thrown obliquely on to the iris by a convex lens. Normally, a few oscillations in the pupil take place, but the general tendency is for the pupil to keep contracted so long as the light remains concentrated on the eye. If the pupil tends to become dilated there must be some commencing defect in the light-conducting elements of the eye, thus confirming the observation already mentioned.

An extremely rare reaction is *the presence of pupil reaction with no perception of light in the same eye*. This indicates that the defect is situated higher up in the brain, *i.e.*, the visual centre, beyond the point where the third nerve is given off.

There are, therefore, 5 abnormal reactions of the pupil.

- (1) No reaction directly, but only consensually.
- (2) No reaction consensually, but only directly.
- (3) No reaction either directly or consensually.
- (4) Failure to maintain contraction when strong light is thrown obliquely into the eye by means of a convex lens.
- (5) The Argyll-Robertson pupil.

All these observations are repeated on the opposite eye.

The reaction of the pupil may be mechanically prevented by iritic adhesions, when the signs simulate those of paralysis of the third nerve, except that in the former case there is a fixed contracted pupil. It may be of assistance to remember that branches from the third nerve supply some of the extrinsic muscles of the eye.

II. *Inequality of the pupils* must always be carefully investigated, and is almost invariably pathological. It is often difficult to determine whether the smaller or the larger pupil belongs to the affected side. This can only be definitely settled by referring to their action as described in the last section. Apart from this, speaking generally, dilatation denotes either paralysis of the third nerve or irritation of the cervical sympathetic, and contraction of the pupil indicates either paralysis of the sympathetic or stimulation of the third nerve. The smaller pupil may be mechanically prevented from assuming its normal shape compared with that of the opposite side, in which case this obviously belongs to the affected eye. In some cases no cause can be found for inequality of the pupils, when it must be regarded as of congenital origin; but this conclusion must be arrived at only after most careful examination.

III. *The shape of the pupillary border of the iris* is of value in some cases, and should be carefully noted. An irregular margin shows the

existence of old or present iritis, which has united certain parts of the iris to the capsule of the lens. An imperfect circle, though even margin, and especially a tendency to pear-shaped pupil, is often a strong indication of the presence or likelihood of glaucoma.

IV. *The colour of the iris* should be investigated. If the colour of the iris is different on the two sides a similar inference may be drawn as in the case of inequality, *viz.*, that it is almost always pathological, and must never be regarded as a purely congenital condition until a most searching examination has been made. The commonest abnormality is that one iris is considerably lighter in colour than the other. A brown iris is often seen on one side and a light grey one on the other; the lighter iris is the diseased one, owing to the atrophy of stroma pigment. This is always an evidence of old or present cyclitis, and the diagnosis can be verified by finding spots of keratitis punctata with a corneal magnifying lens. This difference in colour may be well marked unaccompanied by obvious injection of the eye; but in acute iritis the affected eye shows a dull muddy colour, associated with contracted, irregular, or immobile, pupil, and much ciliary injection. A semi-translucent appearance, with little injection, regular inactive pupil, and shallow anterior chamber, often points to some serious intra-ocular disease (*e.g.*, glioma of the retina, some forms of choroidal inflammation, etc.). Sometimes the pigment layer, which is normally present at the back of the iris, encroaches on the pupillary border, and in extreme cases may eventually form a broad dark-coloured band on the anterior surface of the iris—additional evidence of old cyclitis.

V. *The size of the pupil*, apart from the inequality already referred to, may be important. Speaking generally, the pupil is dilated in glaucoma and contracted in iritis. A contracted pupil, with increased tension, indicates secondary glaucoma from iritis.

VI. *Other macroscopical appearances* should be carefully inspected. Irregularly shaped gaps in the iris, colobomata (which are usually congenital), and iridectomies are all guides. Generally speaking, a broad iridectomy situated above indicates an operation for glaucoma; small or medium-sized one in the same situation, for cataract extraction. A small iridectomy in any part of the circumference suggests an operation for purely optical purposes. Clinically these facts are of value in the following way: The broad iridectomy in one eye puts us on our guard in any disease associated with the opposite eye, because when glaucoma has attacked one eye, the other will probably be affected

sooner or later. A small optical iridectomy leads to inquiry for the cause for which this operation was performed, and thus we observe a lamellar cataract or a corneal opacity, though the latter is often only represented by a faint haze, owing to absorption subsequently to the operation.

Inflammatory nodules are occasionally present on the iris either at the pupillary border or at the periphery in the angle of the anterior chamber, and are an indication of a special type of iritis.

The iris may have a dull blotting-paper appearance accompanied by loss of lustre compared with that of the normal eye. This generally indicates some atrophy from chronic irido-cyclitis, especially if, as already mentioned, it is combined with a difference in colour. A blotting-paper appearance is not uncommon naturally in dark eyes, so that a comparison with the normal eye is advisable.

VII. *The depth of the anterior chamber* is important. A shallow chamber is usual, though not invariable, in glaucoma, and is also present normally in some elderly people. A deep chamber may mean one of several things, *e.g.*, myopia, cyclitis, absence of, or dislocation of, the lens. Occasionally a chamber is shallow at the periphery and deep in the centre. This, combined with a small non-dilatable iris, is a condition known as "bombe iris," and signifies a total posterior annular synechia (binding down of the whole of the pupillary border of the iris to the anterior capsule of the lens), causing increased tension and bulging forward of the periphery of the iris. The periphery of the iris may be in contact with the back of the cornea at only one part of its circumference, the rest of the chamber being of normal depth. This may be due to a new growth pressing the iris forwards, or fibrous adhesions tying up the iris tissue at this spot.

The anterior chamber is deep in myopia. If one eye be myopic while the other is normal or even hypermetropic, the difference in depth is often noticeable. In cyclitis the deep anterior chamber is accounted for by long-continued inflammation leading to the formation of fibrous tissue behind the lens, which by its subsequent contraction draws the iris and lens backwards. Absence of, or dislocation of, the lens also produces increased depth of the anterior chamber and in the latter condition there is in addition some tremulousness of the iris on movement of the eye. This phenomenon is best elicited by causing the patient to make small movements of the eyeballs upwards and downwards and from side to side. When a lens has been extracted by operation there is usually sufficient adhesion of the margin of the iris to the remains of the

capsule to prevent any tremor, but it occasionally is present, when it denotes fluidity of the vitreous.

Thus by examination of the iris, many serious affections—glaucoma, iritis, iridocyclitis, retrobulbar neuritis, optic atrophy, disease of the retina and choroid, absence of, or dislocation of, the lens, refractive errors, etc.—may be suspected and partially diagnosed. And if to these observations on the iris the question of rise or fall of tension be added, there are few urgent eye diseases which even the busiest practitioner can easily overlook.—*St. Bartholomew's Hospital Journal*.

Unrecognised Foreign Bodies in the Eye.

A. TERNON :—A foreign body may be present for a long time in or about the eye without being recognised by the patient or his medical attendant, even on examination. The orbit has long been known as a resting place for large elongated foreign bodies such as fragments of fencing foils, umbrellas, pencils, pipes, etc., broken against the orbital walls and left embedded. Bullets may also remain in the orbit for many years and ultimately give rise to abscesses leading to their discovery on incision or to spontaneous expulsion. In all cases of wound of the orbit, whether recent or remote, the possibility of a foreign body should not be dismissed until radiography has failed to show its presence.

In the lacrymal gland and its duct foreign bodies, especially of the nature of fungus growths, are not very rare. The most frequent unrecognised object is a detached eyelash which becomes impacted in the lower punctum lacrymalis and irritates the conjunctiva. Fragments of probes, cannulæ, and similar objects may escape recognition and occasionally migrate to various parts of the face. Wounds of the eyelid may conceal bodies of considerable size. In one case the eyelet of a shoe remained embedded in the lax palpebral tissues for some months.

Foreign bodies of the conjunctiva occur most frequently and yet often escape recognition. Of those under the upper eyelid the cinder, familiar to railway travellers, is almost invariably seen near the ciliary margin on turning back the lid, but there are numerous large foreign bodies which cannot be seen on everting the lid in the usual way, as they are concealed in the recesses of the conjunctival cul-de-sac. It is sometimes recommended that after everting the lid the cul-de-sac should be explored with a blunt curette, but this incurs the risk of causing sharp objects to penetrate the tissues. The parts may be inspected by everting the lid and then raising it by the introduction of a strabismus hook or bent hairpin either under the edge of the tarsal cartilage or between

the skin surfaces of the everted lid. More thorough exploration may be made by instilling cocaine and then grasping the lid horizontally with a pair of forceps (ordinary dissecting forceps will do) and rolling it so as to stretch and expose its whole extent. The lower cul-de-sac is less extensive and more easily explored but may occasionally contain larvæ of insects and the numerous objects, such as paper or broken glass introduced by malingerers. The presence of a foreign body should always be suspected when conjunctivitis is confined to one eye and the secretion is abundant and very viscid. Certain foreign bodies may escape recognition on the globe of the eye though plainly visible. The most frequent case is that of a person cleaning a bird's cage by blowing into it and receiving a half-shell of a millet seed in the eye. This may adhere intimately to the cornea and when near the margin and accompanied by dilatation of the pericorneal vessels may by its transparency closely simulate a pustule till detached by a probe. A similar mistake is apt to be caused by the presence of the wing case of a small insect. In a child, aged 6, such an object remained 10 months in the eye and when removed was almost concealed by granulations.

In the globe there is less probability of a foreign body escaping recognition but this may happen in the sclerotic iris, or anterior chamber. An object in the lens may be concealed by a traumatic cataract. It is important to determine its situation in view of a subsequent operation. A small and sharp foreign body may enter the eye and a few days later no wound of the globe be detectable. Thus a man driving a nail felt a sudden severe pain in the eye with disturbance of vision. A few days later no wound could be detected but a fragment of metal was observed implanted on the retina which reflected the light on ophthalmoscopic examination. Finally a foreign body may be concealed by an opacity of the cornea. In a case treated by the writer before the introduction of radiography the patient had been struck by the branch of a tree a year before. The cornea, which had suppurated, was totally opaque and the eye was painless even on pressure. The eye was removed at the request of the patient, and on being opened was found to contain a large thorn extending from the cornea to the entrance of the optic nerve. In all these cases radiography is useful in determining the presence and situation of a foreign body.

In affections of the eye the presence of foreign bodies must be constantly suspected even when no traumatism is recognised, and under improbable circumstances.—*The Medical Review*.

OBSTETRICS AND GYNÆCOLOGY.

Acute Salpingitis.

J. H. TARGETT, F.R.C.S.—There are three common causes of acute salpingitis, and this is important in diagnosis :—(1) sepsis following abortion, or labour; more rarely sloughing polypus of the uterus; (2) gonorrhœa—a very frequent cause; perhaps 20-30 per cent. of all cases; (American writers regard it as the most important of all causes); (3) tuberculosis—representing about 10 per cent. of all cases. Inflammation may extend from the appendix to the right Fallopian tube, or from other lesions of the bowel to the pelvic organs. But for clinical purposes such causes may be disregarded in diagnosing acute salpingitis.

The inflammation leads to closure of the abdominal ostia either by causing adhesions to adjacent parts, or by causing recession of the fimbriæ with contraction of the ostium. The latter method is spoken of as "salpingitic closure of the tube," and is probably due to the less virulent forms of infection. As the mucosa of the ampullary portion of the tube becomes swollen, the fimbriæ of the ostium are retracted by slipping of the mucosa on the dilated muscular wall. The fimbriæ are eventually drawn inside, the ring of the ostium contracts down, and the end of the tube becomes closed and rounded. Subsequent distension will convert the inflamed tube into a hydrosalpinx or pyosalpinx. In the more acute cases infection spreads rapidly along the tube, through the abdominal ostium, and sets up an adhesive inflammation of the surrounding peritoneum, and this is called "perimetric closure of the tube." The ostium becomes adherent to the broad ligament, bowel, uterus, or some portion of the pelvic wall.

Symptoms.—When infection has spread from the tubes to the adjacent peritoneum, it sets up perimetritis. Until this happens there are no characteristic symptoms of salpingitis. Hence the symptoms of acute salpingitis are those of the peritonitis which it excites. Only cases unconnected with the puerperium are here considered. For when acute salpingitis follows labour it is part of a general "puerperal fever," and as the uterus is enlarged the Fallopian tubes are high in the pelvis or even in the abdomen proper. Hence their distension gives rise to an abdominal rather than a pelvic swelling, and the diagnosis is consequently made upon a different plan.

The most typical cases arise within a few weeks or months of marriage, and are due to uncurred gonorrhœa in the husband. The patient is seized with severe abdominal pain, causing faintness or vomiting. The lower abdomen becomes distended and rigid, and is very tender. The pulse is rapid, and there is a variable amount of pyrexia.

Vaginal examination usually would be too painful, but there is a history of vaginal discharge since marriage, and the severity of the symptoms is generally proportionate to its virulence.

After a few days' rest in bed with appropriate treatment, the swelling and tenderness of the abdomen subside, and vaginal examination reveals certain important changes in the pelvis. The Fallopian tubes, tender and swollen from inflammation, have sunk to the bottom of Douglas's pouch, and by their increased weight drawn backwards the fundus uteri and the upper edges of the broad ligaments. The local peritonitis has caused adhesions between the uterus with its appendages and the adjoining coils of intestine, great omentum, etc., and thus the pelvic cavity has become shut off from the general peritoneal cavity. These anatomical changes are detected clinically in this way. The cervix is directed or pushed forwards, and pressure on it laterally or upwards causes much pain, which indicates adhesions and fixity of the body of the uterus. Behind the cervix, and filling up the bottom of Douglas's pouch, two tender swellings are felt, which can usually be distinguished as bilateral in attachment, though the swelling on one side may be much larger than on the other. These two swellings represent the inflamed tubes and ovaries, both of which have become swollen and œdematous, and are surrounded by inflammatory exudation. If the swelling on one side is of considerable size, the condition may be due to distension of the tube with serous fluid or pus, or to a collection of serous exudation between the peritoneal adhesions around the diseased organs. A common place to find this fluid is in the "ovarian fossa," behind the broad ligament and bounded by the tube above and the ovary below. Occasionally the ovary is the main cause of the swelling, owing to enlargement of one or more of the small follicular cysts so frequently present beneath the capsule. If the peritonitis is severe, the distension of Douglas's pouch may be chiefly due to serous exudation, or even to pus. The swelling is then excessively tender and bulges into the posterior fornix of the vagina. It is now called a perimetric abscess, or more generally a pelvic abscess.

Diagnosis.—Three conditions must be borne in mind in diagnosing acute salpingitis. They are (1) appendicitis, (2) ruptured tubal gestation, and (3) twisted ovarian cyst. Of these, appendicitis is the most important because of its frequency and the gravity of its symptoms. With a previous history of vaginal discharge and the presence of bilateral swellings in the bottom of the pelvic cavity as described, a diagnosis of salpingitis is not likely to be wrong.

Twisted ovarian cyst may simulate salpingitis in its suddenness of onset, with acute abdominal pain, vomiting, pyrexia, and signs of local

peritonitis in the lower abdomen. But a tumour will be felt rising up from the pelvis, dull on percussion, and probably yielding a definite thrill. There is no vaginal discharge and no evidence of inflammation in the pouch of Douglas.

The following table shows the great similarity to ruptured tubal gestation, as well as the differences:—

		Tubal Gestation.		Acute Salpingitis.
1. Sudden onset	..	Yes	..	Yes
2. Acute abd. pain	..	Yes	..	Yes
3. Pyrexia, rapid pulse		Yes	..	Yes
4. Pelvic tumour	..	Unilateral..		Bilateral.
5. Amenorrhœa	..	Always	..	Sometimes.
6. Breast signs	..	Yes	..	No.
7. Vaginal discharge		Brownish..		Yellow.

The four cardinal symptoms of ruptured tubal gestation are amenorrhœa, sudden abdominal pain, vaginal discharge and pelvic tumour. When any of these are absent there is always a doubt in the diagnosis. As shown in the table, all of these may be present in acute salpingitis. The occasional occurrence of amenorrhœa in acute salpingitis is now well recognised. It would seem that the inflammatory swelling of the tube and ovary may cause the suppression of the menses. Next take the vaginal discharge. In tubal gestation this is of a characteristic brownish colour like menstrual discharge; it is not profuse but is persistent, and there are no signs of recent inflammation in the vagina. On the other hand, the original discharge in acute salpingitis is, or has been, profuse and purulent, while there is likely to be evidences of infection in redness and swelling of Bartholin's ducts, the orifice of the urethra, the interior of the vagina, and perhaps of the cervix uteri, if it can be examined. To this may be added the result of bacteriological examination of the discharge itself. The differences between the pelvic swellings in the two conditions are important, but, as stated, bimanual examination may be difficult. In a typical tubal mole with pelvic hæmatocele (which is the most common result of tubal gestation) the swelling is definitely in one of the posterior quarters of the pelvic cavity, and pushes the uterus forwards and to the opposite side. In favourable circumstances the body of the uterus can be felt in front of the mass. But acute salpingitis is a bilateral disease, for as the infection spreads from the uterine cavity there is no reason why one tube alone should be implicated. Consequently we expect to find swelling or thickening on both sides of the pelvis,

though the swelling on one side may be much larger than its fellow. But this distinction may fail owing to tenderness or rigidity on manipulation.

In tubal gestation the pyrexia is usually slight and the pulse-rate out of proportion to the temperature. The pyrexia can be attributed to the formation of plastic peritonitis around the effused blood, though some writers think it may be due to absorption of the blood itself. The rapid pulse proceeds from the internal hæmorrhage rather than from the pyrexia. In salpingitis the pulse and temperature are both the result of acute peritonitis and vary directly with the virulence of the infection. The abdomen is liable to be extremely tender from free hæmorrhage into the peritoneum, and there is progressive distension of the bowels from inaction. Thus the signs closely resemble those of pelvic peritonitis.

The passage of a decidual cast is a conclusive proof of ectopic pregnancy. But, as this occurs only in a small proportion of cases at the time when the diagnosis has to be made, it is not of much assistance. The cast is frequently expelled a day or two after the operation, or disintegrates and disappears in the vaginal discharge.

Another symptom is marked pallor in tubal gestation. A patient may faint at the sudden onset of acute salpingitis and perhaps show signs of collapse. But in the succeeding stages the face will be flushed rather than pallid, with dry lips and tongue and the usual digestive disturbances.

Breast signs in tubal gestation rarely amount to much, but should always be sought. What we expect is a drop of watery secretion on squeezing the nipple—no pigmentation and no enlargement. There would be no such watery discharge in acute salpingitis.

Treatment.—The difficulties in the diagnosis of certain cases of acute salpingitis from ruptured tubal gestation can be solved only by abdominal section, which would be the proper course if the diagnosis of tubal gestation were assured. But laparotomy is not the appropriate treatment for acute salpingitis. Some appear to regard acute salpingitis as comparable with acute appendicitis, demanding immediate operation. The appendix cæci and Fallopian tube have some common anatomical features, and when inflamed are liable to cause suppuration. But there is no real analogy between the two diseases. In salpingitis the diseased organs sink to the bottom of Douglas's pouch and become shut off from the general peritoneal cavity by protective adhesions at the brim of the pelvis. Consequently diffuse peritonitis from acute salpingitis is rare

days, the weeping surface becomes dry. Then apply an ointment spread thickly upon lint and bound on with a light bandage. Suitable preparations are the zinc ointment, which in the London Hospital pharmacopœia is made with lanolin and vaselin, and to which there is added a little salicylic acid. This is eminently soothing. The lint covered with ointment should be removed night and morning. If a thick layer has been applied it usually comes away easily. If there is any difficulty in removal soak the lint with oil from the outside. Above all the surface must not be cleansed with soap, and washing should be avoided as far as possible. Excessive ointment can be removed with a soft piece of cotton wool. Sometimes a little pure olive oil is useful.

In some subacute forms of eczema and dermatitis due to irritants, pastes, consisting of a basis of starch and vaseline to which is added zinc, either alone or in combination with salicylic acid or some other mild antiseptic, are useful. They have the advantages that they are permeable to perspiration, and are, as a rule, less heating than ointments. They must be applied thickly and form an efficient protection to the healing process.

When in doubt as to what is the best remedy to apply to a case, always start with something bland and soothing. The old advice in eczema, "sooth and seal," still holds. Sooth by zinc or other bland preparation and seal up from the air.

Seborrhœic eruptions form a large group, doubtless of parasitic origin, associated with pityriasis of the scalp, dandruff, and having a predilection for the scalp and the middle line of the trunk. They are of various types, some scaly, some resembling psoriasis, others tending to become eczematus. The scales are usually greasy, and the eruption is often associated with a greasy skin, acne vulgaris, etc. Sulphur is the best remedy. Next to sulphur come other antiseptics, such as resorcin and salicylic acid. However successfully these eruptions are treated on the trunk by sulphur, it must be remembered that the primary seat of the trouble is the scalp. Dandruff is probably caused by parasites. In the dry scales there is the bottle bacillus of Unna, and in the greasy scales there is also staphylococcus epidermidis albus. Dry dandruff is kept in check by shampooing. A useful shampoo lotion contains equal parts of soft soap and spirit with some antiseptic, such as thymol. Be careful to order the soft soap of the chemist, the ordinary commercial soft soap is too irritating. The shampoo lotion is well rubbed into the scalp with the fingers until a free lather is formed. The lather is then washed out with warm water and the head thoroughly dried; for women several warm towels should be got ready. One of the best lotions for general use in pityriasis capitis contains 15 gr. of resorcin to

the oz., with 15 mm. of glycerin or spirit. This should be well rubbed into the scalp daily.

In children scurfiness of the scalp is more likely to be due to ringworm than anything else. Do not be content with a diagnosis of "dandruff" until you have examined the hairs in a little liquor potassæ under the microscope for fungus.

Patients, particularly women, sometimes complain of excessive oiliness of the hair. This is difficult to eradicate. It is often associated with acne and sometimes with seborrhœic eruption upon the trunk. Spirit lotions are the best applications. A useful one contains tannic acid 40 gr., resorcin 3 gr., spirit of lavender and spirit of rosemary, of each 3 ozs. Acetone may also be used as a solvent of the fats.

Closely related to the seborrhoides is *acne vulgaris*. A combination of internal and external treatment is the best. Iron, with aperients, is often necessary, and the old-fashioned Mist. Ferri Cathartic is commonly used. The comedones should be removed by personal manipulation. Frequent bathing, with the use of a sulphur or ichthyol soap, followed by massage of the face, etc., with a soft towel, should also be enjoined. An ointment or sulphur and resorcin should be applied or the following lotion:—

Potassa Sulphurata,
Zinc sulphat.: of each half a dr.
Rose water to 4 oz.

The lotion is freely applied and allowed to dry on, and a second layer is then applied. This process is best carried out while the patient is undressing. The face is washed in the morning, and then a little more of the lotion is applied if necessary.

If there is much suppuration the abscesses must be opened early and with a fine knife to avoid scarring. After evacuation swabbing out with a little carbolic lotion sometimes appears to be useful.

The vaccine treatment of acne is often unsatisfactory. If the lesions are suppurative, combined treatment by the acne bacillus vaccine and staphylococcus vaccine is indicated. The acne vaccine should be given in doses beginning with 5,000,000 and increasing up to 10,000,000. The staphylococcus vaccine should start with a dose of 75 to 100 millions, and be increased up to 250 millions. The injections are given every 10 days. If possible, a vaccine should be obtained from the patient's own organisms, but this requires some time, and is often not successful. Occasionally the results are brilliant, but why there are also frequent failures cannot be said.

Psoriasis is often most troublesome. The best method is to put the patient to bed with old night gear—old sheets and blankets—which

there is no harm in permanently staining. A hot bath is given daily, and to this is added one teaspoonful of bicarbonate of soda to the gallon. The scales are removed as much as possible by brisk friction with soap and flannel, and, after rapid drying, chrysarobin ointment, 20 gr. to the oz., is rubbed in with a glass rubber. Four rubbings on 4 consecutive days are given, and the whole of the rubbed area becomes of a prune-juice colour, with white spots where the psoriasis spots have been. This reaction is sometimes attended with much itching and burning, and there may be a slight rise of temperature if the ointment has been used over a large area. It is therefore best, if possible, to have the patient under observation during the whole time. After the reaction has been produced the inflammation is allowed to subside, and often these rubbings are enough. There is no harm in ordering the chrysarobin to limited areas of psoriasis, but the writer never uses it in out-patient practice for large areas. It must never be used to the face, for it causes a great swelling of the eyelids and conjunctivitis, nor for the scalp, for it stains the hair purple brown.

It is often impossible to use this valuable remedy. For general use, ichthyol gr. 40, acid salicylic gr. 8, in vaselin 1 oz. This has the drawback that it is dirty. It must be rubbed in after bathing in the same way as the chrysarobin. Of the cleaner preparations, the colourless tar called anthrasol, 1 dr. to the oz., is efficient. So is oil of cade a dr. to the oz., but it has a strong smell. White precipitate is another useful remedy, either alone or in combination with the tar preparations.

For the thorough treatment of psoriasis it must be remembered that the scalp is often markedly affected. The shampoo lotion recommended for pityriasis capitis must be used regularly. The daily application of an ointment of resorcin, 1 dr. to the oz., is of great value in getting rid of the masses of scales in the scalp in psoriasis. If there is difficulty in using an ointment, as in a patient who has to go to business, use the resorcin lotion with regular shampooing.

Scabies.—In private practice this is often difficult to treat. For an adult order potassa sulphurata 4 oz. to a 30 gallon bath. The bath should be either made of wood or porcelain. A painted bath will be blackened by the sulphur. The patient remains in the bath for 20 minutes, and while there scrubs the surface as much as possible so as to open up the burrows. After the bath the surface is rapidly dried and then rubbed all over with the sulphur ointment of the B.P. If this should prove too strong, for a tender skin, a dr. or two of sulphur to the oz., is used. The patient puts on the same underclothing. The ointment is well rubbed in morning and night for 3 days when a second bath is

taken. Fresh underclothing may then be put on, and often the cure is complete. If there are still burrows and if the itching persists, the treatment is repeated. Sulphur often sets up an artificial dermatitis which may require soothing remedies such as the zinc ointment or cream. For young children storax ointment (storax 1 dr., methylated spirit 1 dr. benzoated lard 6 dr.) is used. B-naphthol 15 parts, prepared chalk 10 parts, soft soap 50 parts, lard 100 parts (Kaposi's naphthol ointment), is also a nice one for private work.

Pediculosis of the Hair.—In young children the best treatment is the removal of the hair and the application of white precipitate ointment to any impetigo on the scalp. In adult women this is difficult, and the best plan is to have the hair wrapped up in a bathing cap after being thoroughly soaked in equal parts of paraffin and olive oil. This is left on for 24 hours, and then the hair is thoroughly combed with a fine toothcomb dipped in white vinegar. The combing is essential to remove the dead nits which remain attached to the hairs.

Ringworm.—Ringworm of the glabrous skin is usually easily cured either by making the skin exfoliate by the application of iodine, or by frequent washing with soft soap and rubbing in ung. hydrarg ammoniat. Ringworm of the scalp, if the X-rays cannot be used, is a great trial to the patience of the physician. The hair should be removed with the razor, and the surface of the scalp washed daily with soft soap, and then a strong antiseptic ointment which will produce some reaction rubbed in. The formula of Alder-Smith (Phenol., 1 part, sulphur ointment, 2 parts, nitrate of mercury ointment, 2 parts) is one of the best. Oleate of copper ointment is also used. The following treatment advocated by Dr. Adamson is often successful, though it is painful to some children. An ointment made of equal parts of common salt and vaseline is rubbed into the affected areas every morning, and the scalp is fomented at night with hot water on lint. The salt attacks the infected hairs and some pustulation occurs about them. —*London Hospital Gazette.*

Cases and Comments.

Notes on a Fatal Case of Jaundice.

BY

C. ROCKASAWMI CHETTI,

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Maung Po Nyaing, a Burmese male, 25 years old, process-server by occupation, was admitted into this hospital on the evening of the 6th August 1910, complaining of fever which came on with a little chill,

inability to lift up his legs, and walk, tenderness of calf muscles of both legs since the previous night.

Past history:—The patient unmarried. Had about four attacks of fever within the past four or five months. Each attack lasted about 8 or 9 days. Does not take or smoke opium. Occasionally used to take country liquor for the past 4 or 5 years, but has given it up since a month. About 8 years ago he had gonorrhœa but no chancre.

Family history:—Father died of fever about 7 years ago; mother died of some digestive trouble (diarrhoea) 13 years ago; has two younger sisters alive.

Present condition:—The patient was a fairly nourished subject 25 years old.

Heart:—Apex sound heard in its normal place, but was muffled and a distinct mitral murmur present; 2nd sound was abrupt and short. No rhythm; pulse on admission was 90, and ranged afterwards from 104, 110 and 128 per minute. Irregular. There was a drop after every 3rd or 4th beat.

Respiratory system:—Inspiration prolonged. Crepitation heard on the left apex which was dull. Vocal resonance increased on the right side and decreased on the left side. Expectoration mixed with blood. Respirations 20 to 27 per minute.

Sputum examined under microscope. No tubercle bacilli, but streptococci and diplococci found.

Digestive system:—Tongue dirty and coated. Bowels costive. No appetite. Stools were greenish, mixed with a little blood. Examined microscopically, ova of *Ascaris Lumbricoides* and *Tricocephalus Dispar* found.

Blood examined. No malarial parasites found.

Urine:—Color bright yellow. Specific gravity, 1010. Reaction:—alkaline—albumen—*nil*.

Bile present.

On the 8th August a characteristic yellow tinge was noticed on the eyes, face, neck, chest, back and thighs—the patient becoming drowsy. He gradually got worse and the jaundice increased, the yellow tinge extending to the soles of the feet, and eventually died at 6.30 A. M. on the 11th August 1910.

Post mortem was held, all the internal organs were tinged yellow. Pulmonary valves were very much thickened. Heart weighed 7 oz.

Liver was cirrhotic and weighed 2 lbs. Gall bladder was full with bile. Liver was put in formalin lotion and despatched to the Chemical Examiner, Burma, who forwarded it on to Major L. Rogers, Calcutta,

and whose report was as follows:—"I have now cut sections of the liver you sent; it shows a peculiar small celled infiltration in the perilobular tissues but marked atrophy of the liver cells. The only case I have seen which at all corresponds to the history of this is a recent one in the Medical College Hospital of a man dying with jaundice in which I found numerous bacilli in the liver P. M. which proved on culture to be *B. Coli communis*. I have had several very acute fevers in which a *Coli septicæmia* appeared to be the cause of death. Your case was evidently some septicæmia the exact nature of which could only have been decided by bacteriological methods at the P. M."

Treatment of Puerperal Eclampsia by Calcium Lactate—Rapid Recovery.

BY

MANAYATH ANANDAN.

Sub-Assistant Surgeon, Alatur.

Kamakshy Ammah, aged 16 years, primi para, was seen by me on the 8th October 1911 in a state of violent convulsions, having extended to the trunk and upper extremities, with complete unconsciousness, temperature 101.2° in the axilla. Os fully dilated, child dead, and the head felt well fixed under the pubic arch.

Inhalation of chloroform was administered, craniotomy performed, and the child was extracted. As the fits still continued in a mild form, hypodermic injection of Liquid Extract of *Veratrum Viride* m. 15 was given and for about 3 hours the convulsions were not so very violent. The spasms came on again in a severe form when I gave her Calcium Lactate in 15 gr. doses in an ounce of water every 4 hours as suggested by Dr. A. C. F. Halford in the *Australian Medical Gazette* of 20th November 1909 and I am glad to say that the effect was marvellous after the administration of 3 doses. Three more doses were given thrice daily and she was completely cured.

I have tried on previous occasions "Nitroglycerine" subcutaneously and rectal injections, saline solutions and sugar solutions, as published on page 464 of the *Antiseptic*, 1910, but the results were not so very satisfactory as that of Calcium Lactate.

THE ANTISEPTIC.

OCTOBER, 1911.

Persistent Arterial Hypertension.

 PERSISTENTLY raised arterial blood pressure is not usually recognized sufficiently early to be dealt with satisfactorily before its ravages are left behind in the vital organs of the body. In most cases, the suspicion of a continued high tension never dawns upon the mind of the busy medical practitioner until he is rudely startled by the occurrence of one of those calamities that befall either the brain, the heart, or the kidneys. We are now-a-days so much accustomed to treat cerebral hæmorrhage with bleeding and laxatives and vaso-dilators and ice-caps, that we do not think any more of the causes that, in other people, may bring about the same catastrophe. Persistent high blood pressure has to be diagnosed, by carefully looking for it, and treated long before our patient is struck down with an "apoplectic stroke." Hypertension may persist for years before its permanent marks are left on the arteries. The systemic arteries undergo sclerosis; and this affects chiefly the aorta, the coronaries, the cerebral, the renal and the hepatic arteries. Cardio-sclerosis and renal sclerosis usually follow. A vicious antagonism is set up between the arteries that offer a high degree of peripheral resistance, and the heart that has to overcome that resistance. Cardiac hypertrophy follows close upon the heels of cardiac dilatation if the heart muscle is intact and the coronary circulation efficient. A stage further we find the heart so much affected that valvular lesions result, and cardiac incompenation supervenes. We thus come across the man with all the sufferings of an uncompensated heart, the man with the signs of a failing renal function, and the man who is felled with the "apoplectic stroke"—all, the consequences of a high arterial blood pressure, which was not successfully treated, if ever it was diagnosed.

Arterial hypertension may be general or local. It may affect the greater systemic circulation, or to a lesser degree the pulmonary circulation. When generalised, it is usually due to some kind of toxæmia acting

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either on the arterioles locally, or on the vaso-motor centre. The variations in the quantities of certain internal secretions (e.g., the suprarenal) may also affect arterial tension. Localised vaso-constriction is evidenced by such phenomena as polyuria caused by a heightened tension in the renal arteries and the vaso-motor head-ache caused by a tense temporal artery. Such localised vascular spasms are excited by some irritation of the vaso-motor nerve fibres that enervate those arteries. The immediate dangers of an abnormally raised blood pressure are cardiac dilatation and rupture of the arteries at the weak spots of the circulation (*viz.*, the cerebral and pulmonary arteries that are comparatively weak and poorly supplied with vaso-motor nerves.)

The mechanism of production of hypertension may be briefly stated: In health, the vaso-constrictor and vaso-dilator influences are more or less evenly balanced according to the requirements of the body. In the cases we are considering, an over-balancing of the constrictor or dilator influence occurs, and we get hypertension, either by an over-stimulation of the constrictor, or by a paresis of the dilator or inhibiting, force. The toxins that are supposed to bring about a chronic hypertension may appear in the blood from the alimentary canal, especially when that canal is turned into a putrid drain holding within it decomposing food. The addition of alcohol, which is a ready and easily diffusible solvent, facilitates the absorption of larger quantities of toxins, and only paves the way for vaso-motor instability. An excess of sodium chloride in the food is also known to bring on renal inadequacy and a retention of toxins requiring elimination.

Let us review the symptoms and signs that would lead us towards a diagnosis of hypertension. These depend upon the areas of the circulation that are affected at the time of examination.

Cardiac symptoms and signs:—Palpitation, irregularity, tachycardia; paroxysmal dyspnœa. The apex may be displaced to the left. If the heart is intact, the aortic second sound is accentuated in high systemic arterial tension. The intensity of the mitral first sound will depend upon whether hypertrophy or dilatation predominates. The apical impulse is diffused, usually. The radial pulse is compressed with difficulty; the pulse wave has a slow rise and fall, and a sustained apex.

Certain vessels give way on account of the excessive pressure within them;—thus we get premonitory epistaxis, hæmaturia, hæmatemesis, menorrhagia, retinal hæmorrhage.

Brain symptoms:—Mental irritability, alternating buoyancy and lethargy, insomnia, head-ache, neuralgia (e.g., supra-orbital, sciatic).

Alimentary:—Fermentation, flatulence, bilious attacks (liver).

Renal:—Polyuria, albuminuria.

These are some of the signs and symptoms that should make us suspect the presence of hypertension. It is highly important that we detect this condition in its early stages, when the disease is functional, with no permanent organic (structural) changes established in the arteries or the heart. Once our suspicion is aroused, the actual amount of pressure in the arteries can be measured and recorded by means of the sphygmomanometer. Either Brunton's, or French's, or Riva Roci's instrument may be used in daily practice. It is even suggested that after middle life every man must have his blood-pressure taken periodically, with a view to subjecting himself to early treatment if his pulse tension happens to be abnormally high for any length of time. The sphygmomanometer should become a diagnostic instrument of general use, rather than a rare exhibit of scientific curiosity relegated to the Physiological Laboratory as a trap to catch the unwary medical student who tries to elude capture all his five long years of arduous studies.

If we have diagnosed the presence of a persistently raised blood-pressure, our efforts should be directed to lower it to near the normal, and keep it at that level. As we have already observed, we may expect a favourable course in those cases where the hypertension is only functional, and not accompanied by secondary vascular and cardiac degenerative changes. We should be careful not to lower the tension too much, lest an insufficient circulation depress the vital functions of the various organs, and favour the retention of the very toxins the elimination of which we are aiming at. The abnormally high blood pressure is supposed to be a compensatory provision of Nature to procure an easy elimination of the toxins along the kidneys under the increased pressure in the renal arteries. But of course this compensation may be overdone; and we have to step in and lower the tension whenever the pressure is likely to threaten the heart or other organs. The indication to lower the tension may be met by avoiding the absorption of toxins into the blood, by neutralising or eliminating the toxins already in the circulation, and by the administration of vaso-dilators when the tension has risen beyond the limits of safety (say 200 m.m. of Hg. or over). The eliminant measures are of much greater importance than those that aim merely at the relaxation of arterial spasm, for the reason that

in this latter case, the toxins that originated those spasms are locked up in the circulation where the tension is artificially lowered. To prevent the absorption of toxins, we have to avoid all kinds of infection. Alimentary infection is guarded against by reducing the intake, restricting animal foods (to be replaced by a lacto-vegetarian diet until the blood-pressure comes down to normal), prohibiting alcohol and tobacco, and reducing the purin-containing substances like tea, coffee, cocoa. In the specific toxæmias—syphilis, plumbism, malaria, alcoholism, gout, indicanuria—their respective methods of treatment should be adopted. The elimination of the toxins may be secured in various ways—along the kidneys, the skin, the bowels and the lungs. Alkaline salines partially neutralise these poisons and effect their ready elimination *via* the kidney or the bowels. The various baths, massage, and moderate physical exercise—all these tend to lower the blood tension by their stimulant action on the cutaneous excretion. The work of the kidneys should not be hampered by their having to excrete large quantities of chlorides, besides the toxins; and with this object in view, the daily intake of common salt should be much reduced. A calm and quiet life should be enjoined, free from any excitements that may suddenly raise the blood pressure and cause the rupture of a weakened blood vessel in a vital organ. Of the vaso-dilators that are used to depress the circulation we may mention the nitrites for an immediate effect, and the iodides, notably the Potassium Iodide, for prolonged benefit. Chloral, aconite, the bromides, veratrum viride and the theobromine compounds are useful in appropriate cases. The drawback with these vaso-dilators is that they are cardiac depressors at the same time. The cases of chronic hypertension that do not yield to these measures are rare if they are dealt with in time. If it is remembered that the percentage of deaths traceable to arterial degeneration is by no means a small one, we shall probably take more pains to look for the cause that, when unchecked, inevitably leads to arterial sclerosis. Here, more than anywhere else in the domain of Medicine, "to be fore-warned is to be fore-armed." The lay man, for want of knowledge, cannot take notice of the warning. Would the physician, into whose hands several lives are entrusted, also neglect to discover the warning?

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Original Articles.

* CRETINISM AND MONGOLISM.

BY

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Cretinism.



CRETINISM is a disease occurring both endemically and sporadically, characterised by an arrest of growth with a varying degree of mental impairment, and generally associated with absence or lesions of the thyroid gland. ENDEMIC CRETINISM is almost unknown in England, but is said to occur in some parts of Scotland. It is found in the Himalayas and in the Andes, in Madagascar, Sumatra and Java, in the Rocky Mountains of North America, and though more often in the valleys of mountainous countries, it also occurs, though with less frequency in the plains watered by rivers which flow from the mountains where it prevails. We find quite a number of cases of the disease along the courses of the Danube and Rhine, in the Delta of the Ganges and in Assam. Some cases are met with in Switzerland, generally accompanied with a large number of cases of "goitre"; in fact it may be safely said that the disease does not occur without the prevalence of goitre, though this latter often occurs without Cretinism. The most common places are the shut-up valleys in the most mountainous districts. There also seems a close connection with the trouble and the water supply of the district, for there are several springs in Switzerland and Savoy which give a goitre to any one drinking the water, and in these same areas there are a very large percentage of Cretins. In Lombardy there is a spring to which the young men go about the time of conscription. Drinking the water from this spring produces a goitre in as short a time as a fortnight,

* Specially contributed to *The Antiseptic*.

and this will exempt them from military service. In Upper Assam there are one or two stations where the water will ensure a goitre in three months. Notwithstanding this close connection with the water-supply, all analytical methods of examination, both of the water and of the geological formation, have failed to find the poison which may be said to produce the disease. By many authorities the presence of limestone rocks has been suggested as being the chief factor in the causation of both goitre and cretinism, but it is more than probable that the prevalence of endemic cretinism is not entirely dependent on either the formation of the soil or on the climate or water, but is partly kept up by heredity, inter-marriage being very common in the remote districts where the disease occurs.

SPORADIC CRETINISM is essentially similar in its characters to Endemic Cretinism, except in so far that it has no relation to locality, and consequently cases are far from being uncommon in England.

Characteristic features.

Though these are occasionally present at birth (even cases of foetal cretinism have been described) it is somewhat rare for the disease to be recognised before the 7th or 8th month, and even then the condition does not develop much before the 5th or 6th year. The child is weak with small limbs and often large extremities, especially the hands which are often flattened and broad. The power of walking is developed very late, perhaps not until the child has reached the age of 7 or 8, and speech may be absent long after this. The abdomen is large and pendulous, the teeth appear late and decay early. The chief feature of the disease is the arrest of growth, which is naturally mostly marked in the older cretins. The patient may be an adult of 18 or 19 years and yet appear about the height of a child of 3 or 4. Puberty is very late in its appearance and at the best of times the genital organs are very poorly developed. The hair on the scalp is scanty and on the remainder of the body is usually absent, whilst the skin is dry and rough.

The face is square and large with flattened nose and thick lips: the tongue is also large and often protruding from the mouth. These features together with the dribbling of saliva closely resembles the Mongolian facies. The head is large, the neck short and thick, and in the supraclavicular fossæ there are often masses of fat, such as are generally seen in cases of myœdema, which form prominent swellings. The thyroid gland is generally absent in those cases of sporadic cretinism, but in the endemic variety the gland is usually enlarged, forming a fibro-cystic swelling which has but little, if any, of normal thyroid substance

in it. The body temperature is subnormal, the circulation feeble and the extremities cold. The spine is frequently curved, so that the cervical and upper dorsal regions are convex backwards and the lumbar region presents a rather deep concavity. The membrane bones are well developed, but the long bones are shortened and the epiphyses are very much enlarged in relation to the shaft, constituting in some cases almost $\frac{1}{2}$ of the length of the bone.

Mental Power.

The Sardinian Commission divided cretins into three classes according to their mental attainments as follows:

(1) Those having only vegetative faculties, and who are entirely destitute of intellectual and reproductive powers, and cannot speak. These are called "CRETINS".

(2) Those having vegetative and reproductive faculties and some rudiments of speech. Their intellectual efforts correspond only to the impression of their senses, and go no further than their bodily needs. These are named "SEMI-CRETINS."

(3) Those having a greater amount of intellectual power, but less than the normal capacity. They can be taught a trade and can learn some things. These are called "CRETINOUS."

Hence we see the degree of mental impairment varies greatly. In some there is complete absence of speech and of all intellectual faculties; in others there is some power of articulation and they have sufficient intelligence to attend to their bodily wants, and in the still slighter cases the patients are capable of being taught some light work. Many are, however, dirty in their habits and have no sexual desire.

Complications.

Phthisis, though very common in Mongolian and other forms of mental deficiency, is rare in Cretins. Rickets and hernia are common among them. Hydrocephalus, epilepsy and other nervous diseases are quite common, and naturally any of these will increase the mental obtuseness. One remarkable feature is the development of the skull. There is premature ossification and arrested growth of those bones that develop in cartilage; hence the basi-occipital and the basi-sphenoid which should not unite until the 15th or 18th year of life, may be united at birth. Owing to this premature ossification and to the fact that the bones which develop in membrane are normal, the relations of the medulla and the cerebellum to the remainder of the brain become altered; so that the crura, pons and medulla are placed more vertically than normally.

TREATMENT.

Cases with goitre, and those children born in the locality should be removed from those districts where cretinism is endemic. Great benefit is usually obtained by the administration of Thyroid Extract, especially in those cases of sporadic cretinism, provided always the treatment is begun early and continued throughout life. The earlier the case becomes under treatment, the better the prognosis, both regarding the mental attainments and also the general physical development of the child. If the case is recognised during the first six or eight months of life and treatment commenced at once and continued steadily, there is great hope of the patient becoming almost, if not quite, normal in every way.

Mongolism.

Mongols form quite a definite proportion of imbeciles; in fact STILL places them at 22% of all cases. His cases were taken chiefly from observations at hospitals, whereas SHUTTLEWORTH in his observations of all cases seen by him, both at hospitals and in asylums, thinks that they constitute nearly 5% of all cases. I have had five such cases among the last 150 mentally defective children I have seen. Enquiries into the family histories of these children have proved that they are nearly always the offspring of women who have borne children or of women who have borne children towards the latter part of their child-bearing period of life, suggesting therefore they are the product of exhaustion. But whether it is the number of previous children or the age of the mother at the time of the birth of the child that determines the incidence is a point not proved, though in all probability both factors play their parts. It must be remembered, however, that there are many other factors which may render the reproductive power of the woman imperfect (e.g., Tubercle, Syphilis and etc.), and it seems more than probable that in some cases at any rate these factors also share in the causation of the defect.

Characteristic features.

The striking point about these children is the facies. The mouth is rounded and the bridge of the nose flattened and broad. The palpebral fissures slant downwards towards the nose, and this obliquity which is such a feature of the Mongolian races, has given this form of deficiency its name. Epicanthic folds are usually marked on both sides. The cheeks are generally high coloured and the tongue large and fissured, and has a tendency to protrude out of the mouth. The palate is often high and narrow and the skull brachycephalic, the contraction being chiefly in the antero-posterior diameter. The external ears are often

large or badly shaped, and there is generally a squint. Though the height is under the normal, the limbs are well formed and well proportioned. The hands are short, the little finger short, being especially tapered and often curved towards the ring finger. These points are of importance in the diagnosis between Cretins and Mongols, for in the former the fingers are usually square at the tips. As in many cases of imbecility, the circulation is bad and consequently the hands and extremities are blue and cold. Sometimes there is congenital disease of the heart. The shortening of the antero-posterior diameter of the skull causes the naso-pharyngeal space to be small. This produces a kind of snuffling respiration and a great tendency to inflammatory lesions of the air passages. Many habits of a peculiar nature are common among Mongols. Eye rolling (the movement being usually upwards), sudden lateral deviation of the eye-balls to one side or the other, and nystagmus all occur fairly frequently.

Mental Power.

These children are backward in every way, both physically and mentally. Dentition is late in appearing and the teeth decay early, the fontanelles close very late and the powers of walking and talking are also extremely late in making their appearance. The voice is deep and somewhat gruff. The Mongol takes a certain amount of interest in its surroundings and perhaps will soon distinguish strangers from parents, though this may be delayed for some years. They are usually stolid and obstinate, generally somewhat affectionate, though occasionally spiteful, and often markedly jealous of other children. They are quite useless in any work which requires reasoning power but sometimes can be trained to imitate, and cases are on record of Mongols who have lived long enough to be taught sufficient manual work in order to earn their own living. This, however, is the exception rather than the rule. Though frequently dirty in their habits, they can be trained to become fairly, if not quite, clean.

Prognosis.

Unlike many cases of Mental Deficiency, Mongols can usually be recognised at a very early age. The prognosis as regards duration of life is bad, for many of these children die before they attain the age of 1 year and many others before the age of 14 years. The prognosis regarding the mental condition is often more difficult, though even in this a better idea can frequently be given the parents than in many other forms of deficiency. Speaking generally, they will learn to walk and talk as well as be interested in pictures and the like, but even in these

they will be very backward. Some can be taught simple reading and writing, others only slight manual work such as laundry or gardening, whilst some it is impossible to instruct in anything.

Mongols are particularly liable to affections of the respiratory tract especially to such diseases as bronchitis, nasal catarrh and broncho-pneumonia in the younger children, whilst phthisis is extremely liable to attack the elder Mongol. Congenital Heart Disease occurs in quite a large proportion and Blepharitis with or without Conjunctivitis is a very common complication. Probably Phthisis, Heart disease and Bronchitis cause the termination of the majority. Hence these children must be especially guarded against such troubles.

STANSFIELD COLLIER, in an examination of a number of Mongols, found the Vomer projecting much farther backward than normally, in fact in some cases almost reaching the roof of the pharynx. In these, respiration must of necessity be obstructed, and consequently catarrhal conditions of the mucous membranes in these regions will be increased, at the same time rendering the child more liable to the more fatal affections of the lungs.

*THE MODERN VIEW OF FRACTURES OF THE LONG BONES.

BY

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However little of the surgical lore which a medical student has diligently acquired in his hospital days is brought into use in actual general practice later, he will always have fractures to deal with. From his point of view, the correct treatment of fractures is the most important chapter in surgery. If a general practitioner knows how to treat fractures, and knows when to send his patient to an operating surgeon, he has mastered the essentials of surgery.

Unfortunately very little interest has been taken in the treatment of fractures of long bones during the past twenty years, until just now recently. Surgeons have been so interested in the advances in abdominal and cerebral surgery that they have withdrawn their attention from such elementary troubles as broken bones! This is a great pity, because an

* Specially contributed to *The Antiseptic*.

immense amount of permanent misery and crippling may be caused by a badly treated fracture, and the injury is so very common that thousands of persons must be suffering at this very moment from quite unnecessary disablement.

Some years ago MR. ARBUTHNOT LANE took the attitude that the end-results of fractures in working men were so bad that they should be treated by operation in the majority of cases. He argued that it is quite unusual for a man with a broken bone in the lower extremity to be able to return to manual work involving climbing, running or much standing or walking. He claimed that by early open operation and plating the ends of the bones together, as a routine measure in the fractures of adults, far better results could be obtained.

It then became evident that we were quite without reliable data as to what the real prognosis in fractures is. The text-books have merely copied from one another, and no one knows on what facts their statements are based. Two important papers have appeared, since MR. LANES's book was written, bearing on the subject. MR. MURRAY, of Liverpool, has published a study of the results of treatment of 88 fractures of the tibia and fibula and finds that the prognosis without operation is by no means so bad as Mr. LANE supposes. On the other hand MR. CLINTON DENT has compiled a most lamentable list of cases of fracture of the femur, tibia and fibula, in which very few were able to work within six months; a fractured femur or a Pott's fracture in a policeman was almost invariably followed by such disability that the patient was unable to resume his occupation, which is of course an exacting one.

The publication of these and other opinions led the British Medical Association to appoint a committee to obtain a wide body of statistics so as to find out what the prognosis in fractures, with or without operation, really is. It has been the writer's privilege to be present at the investigation of some 135 cases of fracture, and to see the end-result in each. Of course the final report of the committee will include an immensely greater number of cases, but it is not likely to be ready for some considerable time. The 135 patients were not picked in any way. They had been treated during the years 1906-1910; all the fractures attended during those years were asked to attend, and these 135 were the patients who responded to the request. They were all examined by a surgeon who had *not* been responsible for the original treatment, so there is no question of personal bias.

The outstanding feature is the immense importance of the age of the patient in determining the prognosis. In a word, the children all

did well; adults were far more liable to after-trouble. Even when there was bony deformity still present, the children and their parents nearly always declared that the limb was as good as the other.

We will consider the results of the various injuries in order:—

Fractured Femur.—The great majority of our cases were children, and they did well almost invariably. In 32 cases it was impossible to discover anything at all the matter; the result was perfect. Four more were perfect functionally, but some bowing or callus could be detected. In two the result was a little less than perfect, but there was no serious disability. In another case, the fracture involved the upper epiphysis, but the recovery was perfect.

Fourteen adults were seen; some were aged. In six cases there was great disability; three involved the shaft, and three the upper extremity. Two were absolutely well; a third would probably have been but for injuries elsewhere; a fourth was quite restored according to his own account, but some callus was present. These four successful cases all involved the shaft of the femur. In another case the result was not perfect, but the patient was on full work with a high boot. A man with a supracondylar fracture which had given great trouble from the usual backward rotation of the condyles could walk very well, but showed $\frac{1}{2}$ inch shortening. Two patients, the one a hemiplegic and the other an old lady of 76, had made very good recoveries from fractures of the neck; there was some shortening and bony thickening, but they were on their feet all day and able to do light work.

The children were restored to normal in from 8 to 12 weeks. The following times were given by the adults for return to work: 10, 14, 16, or 24, 28, 28, 36 weeks.

The usual deformities were outward or forward bowing. The former is often preventible, by using a sufficiently heavy weight for extension, and by inserting a large pad between the Liston splint and the site of fracture.

Fractured Tibia.—Six children all recovered perfectly.

Of six adults suffering from a fracture of the shaft, two were restored to normal function, although one of these showed a little overlap; four more were not perfect, but not seriously crippled; they felt some want of confidence, and could not do heavy scaffolding work as they used to. None were unable to work.

Four adults with a fracture of the internal malleolus were quite cured; another was a little stiff in his ankle, and had lost 25 per cent of his wages in a saw mill in consequence.

One fracture near the knee, in an adult, turned out badly. With this exception all the fractures of this bone did very fairly well. The children were restored to normal in 10, 12, and 16 weeks; the adults returned to work in 7, 12, 26, 28, 36 and 36 weeks.

Fractured Fibula.—Four cases (three of them children) in which the shaft was broken all did perfectly.

There were 21 cases of Pott's fracture, all in adults. The results were much better than those quoted by MR. DENT. Eleven were restored perfectly, although in two there was some eversion. In spite of this, one of them had just cycled 100 miles. Four others were not perfect, but got about their work well enough; one was still a dock labourer; these all showed some widening of the malleoli and eversion. In five cases the result was bad. One of them had had part of his astragalus removed.

The patients returned to work in 5, 7, 7, 8, 8, 10, 12, 15, 16, 16, 20, 20, 26 and 30 weeks.

Fractured Tibia and Fibula.—Eleven children all did well. In three other cases the alignment was not perfect, but only one found the slightest disability in consequence.

Five adults found the injured leg quite as good as the other; one had to walk twenty miles daily as a postman. In his case and another, however, there was about $\frac{1}{2}$ inch shortening. Eight others had a good result, but not perfect; half of these involved the ankle joint. In four cases the result was bad, and the patients could not work. Two of these involved the ankle; another had been treated by Lane's plating operation two months after the injury.

The children were all well in 8 to 12 weeks. The adults returned to work in 12, 12, 14, 16, 17, 20, 24, 24, 26, 26, and 60 weeks. (The last had multiple injuries).

Fractured Arm Bones.—We had but few of these, and mostly complicated by other injuries. The most instructive were four cases of children or young adults admitted for difficult fractures of the elbow joint, and requiring one or several anæsthetics to overcome obstinate stiffness. All four obtained a functional result practically perfect; two of them had lost the normal outward deviation (carrying angle) of the forearm.

What practical conclusions may we draw from this study? In the first place, it is evident that the ordinary methods of treating fractures in children are quite adequate if carefully supervised. Out of 59 examined

there was not a single case of serious disablement, and all but two or three were functionally perfect. Of the adults there was a bad result in 16 cases, but the patient was able to work in 48 cases; 26 of these were described as restored absolutely to normal. These figures scarcely invite us to operate as a routine. Several of the unsatisfactory cases had multiple injuries, were old paralytics, or are crippled more by stiff joints than by bony displacement; three of them involved the neck of the femur. These could not have been improved by operating.

TREATMENT OF FRACTURES OF THE FEMUR. Fractures of the upper end in aged people do not require much treatment. The patient should be got up on crutches as soon as possible. They often fail to unite and there is great danger of pneumonia.

Fractures of the shaft should be treated as follows:—

In new-born infants—by bandaging the thigh acutely flexed on the abdomen.

In children under two—by vertical suspension of both legs from a gallows with the buttocks just swinging.

In older children—by a long Liston with a large pad between the splint and the fracture, and weight extension, about 1 lb. for each year of the child's age up to 7.

In adults—by the same, with 8-12 lbs. extension, or better, because more comfortable, by Hodgen's method.

When union is established, the patient should be sent out with a Thomas' splint or a plaster hip spica and crutches.

Massage should be instituted from the second or third day, and the joints carefully moved once a day.

TREATMENT OF FRACTURES OF THE LEG. If there is a great deal of swelling threatening, it is best to make no attempt to put the fracture up in splints, but to wrap it round with a very large quantity of wool and to bandage over this very tightly. The fragments cannot get displaced, and the elastic pressure of the wool prevents excessive effusion. After three days, splints are applied instead of the wool. Pott's fracture is best treated either by a back-splint with foot-piece and a pair of side-splints buckled on, all slung in a Salter's cradle, or by an outside side-splint with a piece for the sole of the foot, the leg resting, flexed at the knee, on its outside side. Massage and movements are instituted as soon as the pain has passed off a little. After two or three weeks, a pair of plaster splints are made exactly to the shape of the limb, extending from toes to just below the knee (for a fracture near the lower end); these are

buckled or bandaged on, and removed daily for massage and movements. If desired, and if there is not much swelling or deformity, these plaster splints can be applied from the first, and the patient need not stay in bed at all if he wears a boot with patten on the sound foot and uses crutches.

If good alignment cannot be maintained by either of the above methods even after reduction under an anæsthetic, and the circumstances warrant it, an incision should be made and the ends fastened together in good position by Lane's plates and screws. Wiring is seldom of much use for long bones. An ivory intramedullary splint often helps.

When the bones are properly set, the middle of the patella, crest of the tibia, and middle of the second toe will all be in one straight line.

Fractures at the elbow are particularly common in children, and give rise to much stiffness and consequent anxiety. Fortunately the least promising of them usually loosen in the course of months or years. It is very important that they should be treated from the first in acute flexion. Splints are not necessary; a good bandage will fix the forearm as close as possible to the humerus, and the whole is then bandaged to the side. Massage is undertaken early, but movements must be carried out carefully, one good move being made on the tenth and subsequent days. Beware of numerous little movements, which evoke callus formation. On the other, it is not wise to use much force under an anæsthetic in a child.

Following on fractures particularly of the elbow there is often some difficulty in flexion consequent on the formation of a mass of bone in the biceps tendon. This has been called "traumatic myositis ossificans". It is quite useless to remove it by operation, for it will recur. Fortunately, it generally subsides sufficiently to give no more trouble if the joint is absolutely fixed by splints for a month or two.

Our Contemporaries.

MEDICINE.

Retrospect of Medicine

The Fringes of the Cancer Problem

BY

DR. WILLIAM SAMPSON HANDLEY

UNDER this title some interesting observations on the question of the spread of cancer were recently made by Dr. Handley before the members of the Royal Academy of Medicine in Ireland. The lecturer

spoke mainly of the dissemination of the disease. Until a few years ago, the theory which held the field was the embolic theory, according to which cancer particles, passing along the lymphatics, get into the blood stream, are carried all over the body, and give rise to a crop of metastases. Dr. Handley pointed out that there is reason to believe that this theory, while containing an element of truth, is, on the whole, erroneous, and that the permeation theory is the correct one.

By permeation is meant the growth of cancer along the lymphatic vessels, as a continuous line of cells, the cells growing like tendril shoots by their own power of growth. The main highway of dissemination is the lymphatic plexus, the growth extending centrifugally in all directions, independently of the lymph stream; and stealing along the fine lymphatics of the plexus. Although cancer cells may be embolized in an early stage along the trunk lymphatics to the axillary glands, it would seem that these cells are destroyed when, after passing through other glands, they reach the blood stream. This view has received support from the work of Schmidt, who has described the destruction of cancer cells in the small arteries of the lungs. The fact that permeation can cross the boundaries between adjoining lymphatic areas, places the whole body at the mercy of the process, if time enough be given.

For the purpose of finding out how dissemination occurred, Dr. Handley took the case of an early, secondary deposit in the inguinal region. He took a strip down the thigh, froze it, and cut it into slices, and obtained the specimen from which the slides were made. The larger nodules were on the end of the strip nearest the inguinal glands. They became smaller, until finally, at the other end of the strip they could only be seen as a net-work of black lines. These were permeated lymphatics. At the furthest end of the strip there was no invasion of the blood vessels, but nearer the glands the veins were found to be invaded, and then the arteries. That invasion takes place because the lymphatics run in company with the veins, and when the lymphatics are infected it is only a matter of time for the veins, and later the arteries, to be invaded. Slides were shown demonstrating the process of permeation; and in order to prove that what he pointed out as lymphatics were really lymphatics, and not blood vessels, he showed a slide with a cord of black growth accompanying the artery and vein, the latter being perfectly normal, which showed that permeation of the lymphatics preceded the invasion of the veins and arteries. After a time the growth distended and ruptured the lymphatics, and the melanotic growth infiltrated the vein. When the vein is once invaded, it is very likely that the lymphatic permeation in melanotic sarcoma has

done its most important work, and that the growth is then disseminated by the blood stream; but sometimes the distribution of the metastases shows that lymphatic permeation is the important agent practically all through in distributing the growth.

In breast cancer, the clinical evidence of dissemination in the superficial layers is the presence of subcutaneous nodules. These always appear close to the primary growth, and spread from it centrifugally. Yet close to the growth no permeation can be traced. The reason for this, Dr. Handley demonstrated by a series of slides, showing that around the primary growth the permeated lymphatics are gradually changed into fibrous cords containing no cancer cells. As one passes up towards the primary growth, it will be found that the permeated lymphatics look larger, because they are being distended by the continued growth of the cells. The slides showed varying degrees of distention, until the lymphatics became so distended that the cancer cells found it difficult to nourish themselves. Coincident with the degeneration which took place, a few inflammatory round cells appeared in the neighbourhood of the permeated lymphatic. As the distention could not go on indefinitely, the mass of cells finally had burst the lymphatic. Then the mass of inflammatory cells was organized into fibrous tissue, and the degenerate cancer cells became enclosed in a layer of newly organized fibrous tissue. Such tissue had contracted down on the degenerate cancer cells, and finally squeezed them out of existence. This accounts for many things in connexion with cancer,—for the absence of permeated lymphatics from the region immediately round the primary growth, and also for the whole train of symptoms due to puckering around the original growth. It accounts for the contraction of the nipple, for the small size of the affected breast, and for the brawny arm of breast cancer, which is due to the entire separation of the lymphatic system of the arm from the lymphatic system of the rest of the body. This cannot be brought about merely by blocking the lymphatic trunks, for a collateral circulation will take place, but if in the whole district all the lymphatics are turned into fibrous cords, the lymph can only return slowly by percolating the tissue spaces.

As to visceral dissemination, Dr. Handley thought that it goes by one of two routes, either by infiltrating the chest wall immediately under the growth, or by infiltrating the epigastric parietes at a point immediately under the ensiform cartilage. That was suggested to him first, because there are so many cases in which after death secondary deposits are present in the abdomen and not in the chest. That is a condition of

affairs which the embolic theory fails to account for. It seemed to him that possibly the solution might be the direct infiltration of the parietes and he was able to prove that such was really the case. Slides were shown demonstrating the various stages of this process. The extension of permeation in the facial plexus leads to the formation of nodules upon the rectus sheath in the epigastric angle. Next, the muscle itself and the fibrous tissue of the linea alba are infiltrated by the growth, which is thus carried to the subperitoneal fat and to the subperitoneal lymphatic plexus. Cancer cells then escape into the general peritoneal cavity, and implant themselves upon the liver, or, falling into the pelvis, there give rise to secondary deposits. With regard to stomach cancer, sometimes it invades the parietes at the umbilicus. A slide shown was from the case of a young man in whom malignant disease was diagnosed because of the presence of three tiny nodules close to the umbilicus. In another slide the centrifugal spread was manifest, the assumption being that it spread, like breast cancer, chiefly by permeation. It is difficult in stomach cancer to trace permeation, but this may be overcome in some degree by employing a stain called mucicarmine, which is a specific stain for mucus.—*The Canadian Medical Journal*.

Differential Diagnosis of Intercostal Neuralgia and Pleurisy without Effusion.

Schepelmann says that when the trunk is bent over to the side the seat of the pain, the pain increases in case of intercostal neuralgia, while with pleurisy the pain increases when the trunk is bent over to the sound side. He explains the mechanism of this but warns that sometimes both the pleura and the nerve are inflamed, in which case nothing is to be learned from this sign. Muscular disturbances may be differentiated by the painfulness of any and all movements of the trunk and arms and possibly by the tenderness of the muscles involved, the frequent change in the localization of pain and the improvement under application of the induced electric current.—*The Canadian Practitioner and Review*.

Stammering.

STAMMERERS from time immemorial have been jeered at, and their trouble treated as a joke, while for treatment they have been relegated to the tender mercies of quacks. Physicians who do not include patent medicines in their pharmacopœia recommend without hesitation treatment by a secret process, of which they know nothing, and about which

even the patient is sworn to secrecy. Cures, often temporarily gained by these methods; are trumpeted abroad, while the countless failures are never heard of. Experience shows that there is one method, and one method only, whereby stammering can be cured, namely, by a complete re-education of the centres of speech, a process which demands, first and foremost, a course of development of mental control, and in the second, certain vocal and physical exercises.

It must be realized in the first place, that stammering is not due to any organic disturbance of the speech centres, but is a functional disturbance, or, more accurately, a lack of co-ordination between the various associated centres controlling speech, and thus the cure must be based upon the establishment by rational methods of the lacking co-ordination.

While the mental attitude towards speech is the same in all stammerers, they have always been classified by the outward means they employ to make themselves understood. There is the nervous, high-strung person, hardly to be called a stammerer, who becomes practically speechless when under great excitement, and who may, if brought into contact with stammerers, contract the habit. This is the only hereditary tendency in stammering, if it can be called such. Some persons have difficulty in finding words to express themselves, their minds move slowly, and a hesitating manner may develop stammering if much in the company of stammerers. Too rapid speech may have the same effect, and in the treatment of this condition the speech must be developed accordingly. A rapid thinker and speaker must learn to speak and think slowly, and *vice versa*. These defects are, of course, often found in those who do not stammer, and are largely due to poor methods of education. Again, there is the lisp, the improper use of the lips in articulation, caused, sometimes, by that "baby talk" which parents are so fond of encouraging and which is frequently the rudimentary stage of stammering.

From these less severe conditions, we pass to the more serious, the so-called stuttering, about which, while the patient is aware that he stammers, he does not worry and takes no steps towards being cured; and also the stammerer who does not know that he stammers unless reminded of it. These may be called chronic cases and are most difficult to deal with.

The painful muscular efforts and mental distress caused by the difficulty of articulation, give rise to many obscure symptoms, such as acute diarrhoea, cystitis, and, in women, to various gynecological con-

ditions. It is well to watch patients of a low mental grade for signs of sexual abuse.

Some of the methods employed by the so-called schools for stammerers cannot be altogether condemned, as in many cases, in fact in nearly all, there is an improvement, sometimes an apparent cure. There is, occasionally, an actual cure. Some stammerers are helped by a trifling mechanical action, such as beating time, drawing a long breath, or holding the voice to a monotone. Such methods are valuable as far as they go, and it is upon these physical exercises that the schools rely. So long as the patient is diverted by keeping his mind upon them as a means of cure, they will be of great assistance to him, but once they become natural, unconscious acts and are performed as such by the patient, their usefulness ends and the stammerer is worse than before, morbid, hopeless, and depressed.

Saying this, however, does not mean that stammering is incurable. On the contrary, there is a rational method of treatment which, if persevered in, is sure to meet with success. It is a treatment applicable to all cases and forms of this condition, the only difference being in the individuals treated and in their capacity to assume the correct mental attitude. This lies principally in the hands of the teacher, and constitutes the chief difficulty in procuring suitable persons to undertake the treatment of this neurotic condition, the degree and extent of which can be appreciated only by those who have experienced it or been brought into close contact with it. Institutional treatment is imperative in all cases. The constant presence of friends and relatives who are accustomed to the patient's imperfect speech, and before whom he relaxes any effort he may be making towards speech control, is most injurious.

During the first few weeks of treatment the pupil should be solely in the company of the teacher, and afterwards, as the cure progresses, he should be in constant touch with those who understand and sympathize with him, and are able and willing to assist him to avoid the many pit-falls which are waiting to entrap him.

It being recognized that a correct mental attitude or re-education of the centres of speech is the cure for stammering, which cure must be worked from the conscious to the sub-conscious mind, it may be seen that both time and patience on the part of teacher and pupil will be needed. Some cases take much longer than others, being dependent upon the ability of the patient to grasp the idea of the mental attitude

and of the teacher to get into perfect accord with his pupil. Normal speech is an unconscious mental act: stammering is a self-conscious one.

The greatest factor in the cure of stammering is the elimination of fear from the mind. The very thought of stammering must be put far from the pupil; he must be impressed that "the coward dies a thousand deaths, the brave but one," and encouraged in every way. In from six months, for mild cases, to two years, for a very severe case, the pupil should be able to speak perfectly, severe cases in this instance meaning not necessarily a severe stammerer but one who finds difficulty in adjusting his mind to the proper mental attitude. He may not have complete, natural, unconscious speech, but with increasing confidence and strengthening will-power, that will come in time.

Until absolutely unconscious, natural speech is attained, relapses are sure to occur, but will grow less and less frequent and eventually disappear. The greatest difficulty in treating a relapsed patient, is his discouraged and despondent state of mind. To obviate this the teacher must be in complete accord with the patient, keeping continually before him that all who stammer can be cured, even those who have become mentally unsettled by the stammering itself.

During treatment, the patient must hear only perfect speech. A proper environment is most important. Complete silence should be observed for a month or six weeks except during treatment. He must not even talk to himself, a peculiarity often noticed in such cases. During this time he must exert great mental effort in keeping his mind free from fear and upon perfect speech. This is the most difficult part of the treatment, but patience and perseverance effect wonderful results. He must not let himself think of stammering. Just before going to sleep let him fix his mind upon perfect speech, and the feeling of perfect speech; after continued practice the conscious mind will work upon the unconscious, producing a condition of self-hypnosis.

During this time the patients are taken individually by the instructor and taught deep-breathing exercises, inflating the chest, and forcing down the diaphragm. While holding the breath, they exercise on the five vowels, using the open throat, Italian singing method. A mistake is made in telling patients to take a long breath and speak while exhaling. Let them take a deep breath and speak while holding it, keeping the mind away from the fact that it is slowly leaving, which tends to make them panic-stricken. The contracted chest and severe muscular efforts of stammerers, so distressing to witness, are due to this effort to speak after the breath has been entirely exhaled. During these exercises let the facial expression be calm and placid and the

mind kept upon the play of sound upon the vocal cords, as upon a musical instrument. No one stammers while singing, and during these exercises the pupil will not stammer. After a longer or shorter period he may practise modulating the voice in the chest register, which must be strictly adhered to during the entire treatment.

At the end of this preliminary training, which may occupy about six weeks, let the pupil and teacher practise writing with the left, instead of the right, hand. This requires conscious mental effort, which is quite noticeable to both teacher and pupil, frequently causing them to lose sight of the end, in their concentration upon the means. The case is distinctly parallel to the mental attitude required of the patient undergoing re-education.

In addition, as Dr. Makuen, of Philadelphia, has observed, "in a general way, the stammerer should learn the 'physiologic alphabet,' theoretically as well as practically. He should learn exactly how to produce and articulate, if you please, every one of the elementary sounds of speech, and should learn to hear them accurately and know when he himself produces them accurately. In other words, he must develop his ear for speech before he can make any progress in speech culture. He must also learn the exact musculature of speech, and when an untoward action or co-ordination appears in any of the three peripheral mechanisms, it should be pointed out to him, and suitable exercises given to correct it. In this way the patient gradually learns how to regulate his nervous energy, how to inhibit certain hitherto overacting nerve impulses which have resulted in the muscle spasms characteristic of stammering, and how to distribute the innervations to the various mechanisms in their proper order and intensity."

By now the patient will have acquired a certain amount of confidence in himself, and may begin to articulate slowly the vowels in a monotonous, slurring voice. He may also practise words beginning with "ah," holding the chin well in. After a time he may, while practising, gradually lower and raise the voice, as in speech. Some words and numbers he will find more difficult to pronounce than others. At this stage they must be avoided. He may now read aloud, very slowly, in a monotone. Gradually raising and lowering the voice while reading, may next follow. By this time the cure should be well advanced. When any fear or thought of stammering intrudes, let the patient stop what he is doing or saying, and begin something quite different. Let him later revert to what has caused the difficulty, and repeat it several times. Every word overcome in this way is a distinct advance. As self-confidence increases conversational exercises may be

began, first with the teacher, finally with strangers. The patient must take up elocution, when he can converse fairly well, as well as deportment, calisthenics, chest development, and anything that tends to give self-confidence when meeting the public.

One of the easiest mental exercises is to concentrate the mind upon a tune. A nervous person who can scarcely speak before strangers, can frequently give clever impersonations and act in character, and stammerers generally find that they can talk better while listening to music, or during similar occupation of the conscious mind. This tendency is much used in this treatment by talking in a monotone, or singing voice, or in any way altering the natural voice, speaking, as it were, "in character."

Important as the physical treatment is, it is entirely subservient to the mental. The mind must be trained to forget itself, and concentrate upon the perfect speech which, sooner or later, will reward courage and perseverance. That the general health must be carefully attended to during the training goes without saying,—regular hours, abundance of fresh air and sleep, and freedom from worry, as well as careful dieting and avoidance of stimulants. The general treatment for neurasthenia suits the case.—*The Canadian Medical Association Journal*.

In the Presence of Tubercle Bacillus in the Blood of Tubercular Patients.

By

DR. T. KURASHIGE.

The tubercular infection of rabbits by the injection of the blood of tubercular patients was first produced by Villemin long before the discovery of Tub. Bac. by Koch, and Weichselbaum was the first man to discover Tub. Bac. in the blood of tubercular patients. The last named discovered Tub. Bac. in cover-glass-specimens of the blood of 3 patients who died of general miliary tuberculosis and later Meisels obtained the same result with the blood of 8 cases, from one of which he recognised Tub. Bac. in the blood during the life of the patient. Lustig also obtained the same result with the blood of miliary tuberculosis patients and Rutimeyer found Tub. Bac. in the blood of two miliary tuberculosis patients before and after death. All these positive results were always obtained in cases of general miliary tuberculosis and the recognition of the bacilli was always extremely difficult, as told by Sticker, from one of whose cases he made 20 specimens with negative result, but in the 21st specimen he discovered 6 Tub. Bac.

Thus, although the discovery of Tub. Bac. in the blood is very difficult, the results of the experiments by various authors proved the presence of T. B. in the blood of general miliary tuberculosis patients without much doubt. However, Villemin's experiment on one hand and the experiments of Weigert as regards the localising character of tuberculosis on the other have made many people to form an opinion that in the tubercular lesions (excluding general miliary tuberculosis) we may have the entrance of Tub. Bac. into the blood only in the period of agony.

Many authors, especially Cornet, however, never accepted this theory and simply laughed it away and thought the presence of Tub. Bac. in blood is only possible in cases of general miliary tuberculosis. At about this time the theory of mixed infection of tuberculosis began to be generally studied and the question as regards the presence of Tub. Bac. in blood was almost entirely left out. Thus in Germany there were only 2 literatures (one by Ludke and the other by Hildebrandt) published on this subject during this period. But before this time Jonsset recognised Tub. Bac. in the blood of tubercular patients not suffering from General Miliary Tuberculosis by means of Inoskopie invented by him and his results were proved right by means of animal experiments. His results were positive 11 out of 35 cases (31 p.c.); namely 8 positive cases out of 15 acute and subacute pulmonary tuberculosis and 3 positive primary tubercular bacteriamie. Besides him Bagancon, Griffen, Philibert and Hildebrandt obtained positive results in a small number of cases, and Lesiener 5 out of 35 cases. In 1904 Schmore and Geipel proved the presence of Tub. Bac. in the placental blood in 9 out of 20 cases. The latest result is that of Ludke who obtained positive results in 3 severe cases of pulmonary tuberculosis.

As regards animal experiments, Baumgarten was the first in 1887 to obtain the positive result and lately Marmorek has done many experiments in this direction. Thus also from the clinical side Konig (1890) and Lowenstein (1905) began to form an opinion that the tubercular lesions will always lead to bacteriamie sooner or later. Liebermeister obtained positive results in 20 out of 50 cases—60 p.c. in 3rd period's patients and 30 p.c. in 2nd period's patients—by means of animal experiments.

Now I have had a very good opportunity of examining the presence of Tub. Bac. in the blood among the numerous in-and out-patients of the tubercular department of Osaka Medical College and the method used by myself is a slight modification of Schnittler-Stanbli's method. The method is as follows :

1 ccm. of patient's blood is taken and put into a centrifuge glass filled with 5 ccm. of 3 % acetic acid and after good shakings left for a time. From 30 to 60 minutes afterwards it is centrifugalised and the clear upper fluid is poured off, leaving blackish-brown residues. Now 5 ccm. of undiluted Antiformin is added to the residue, which will, on the addition of this solution, quickly dissolve or, in about 5 minutes, forming a clear solution and this clear fluid is centrifugalised. After the centrifugalisation the residue is almost absent. This residue is mixed with 5 ccm. of aqua distillata and thrice washed. The residue is now almost absent and one can just see a cloudiness at the bottom of centrifuge glasses; coverslip specimens are made from this residue and stained with Ziehl-Nielsens method and microscopically examined. The centrifuge used has 3000 resolutions per minute and each centrifugalisation lasts 30 min. to ensure the complete precipitation

The Antiformin solution used by myself is made according to the next prescription :

Sodium hypophosphat ..	11. 2 grammes.
Caustic Soda	5. 6 "
Aqua Distil	89. 0 "

The points to be careful are the time during which the blood or its residue is kept in contact with acetic acid and Antiformin. Acetic acid should act from $\frac{1}{2}$ —1 hour. If it is kept in contact longer than this it damages the liquefying effect of Antiformin and leaves comparatively a larger amount of residue, which makes the microscopic examination more difficult. Also it necessitates Antiformin to act longer in order to get complete liquefaction and damages the Tub. Bac. giving bad results. These failures were frequently experienced by myself and a majority of the negative results proved to be positive after a repeated experiment.

Antiformin should act as short as possible, and if the liquefaction is complete it must be immediately centrifugalised and washed with distilled water after pouring the upper fluid. Otherwise the undiluted Antiformin will damage the bacilli as regards their morphology and staining power if kept long and will kill the bacilli, which makes animal experiment uncertain.—*The Sei-I Kwai Medical Journal.*

Absence of Cough in Early Phthisis.

Most physicians believe that the cough of phthisis depends on disease in the lung, and they therefore conclude that the absence of cough is proof of absence of phthisis; many even consider examination of the chest for phthisis superfluous in the absence of cough. This belief often prevents early diagnosis. That phthisis may exist without

cough is shown by the fact that hæmoptysis often occurs in persons apparently healthy and without any cough. The subsequent course may show that the hæmoptysis was due to an active tuberculous focus. Extreme anæmia, tiredness after rising in the morning, and night sweats are all early signs of phthisis, and may precede cough. Examination frequently reveals tuberculosis in one or both lungs. Cough is not an early symptom of phthisis, and may be absent even when the disease is so advanced that every other sign is present. That cough is absent in early phthisis is further shown by the facts that (1) the necropsy of persons who have not coughed has revealed active tuberculous foci in the lungs, and (2) in persons without cough, infiltration of the apices has been clinically demonstrated, and ultimately phthisis has become obvious. Although the mucous membrane of a bronchus in the vicinity of a small tuberculous focus may secrete gelatinous or pigmented material, the ciliated epithelium of the respiratory tract is capable of removing it without the aid of coughing. And even blood from such a focus may escape through the trachea and larynx, and be hawked up without coughing. Hence it is a common complaint with patients in an early stage of phthisis that they have to clear the throat frequently, and the attention of the physician is thus often diverted from the lungs. Not only do the lungs expel a large quantity of secretion merely by the action of ciliated epithelium without coughing, but they tolerate the presence of secretion in large quantities for many hours as shown by the fact that in late phthisis sputum collects over night in the lungs, and is not expectorated till the morning.

The writer holds that cough in the phthisical is due to laryngeal catarrh, and that without this there is no cough. However, laryngeal catarrh is seldom absent except in early phthisis, and it readily appears as a spring or autumn "cold" in consequence of sudden changes in the weather. Usually such "colds" are transitory, but they may linger on and lead to the examination of the chest. When this examination reveals pulmonary tuberculosis, blame is attached to the "cold," and a previous history of progressive weakness, anæmia and headaches after work is ignored. In the later stages of phthisis cough is persistent owing to laryngeal catarrh which is kept up by the large quantities of irritating material secreted by the bronchi and cavities.

The earliest tuberculous foci in a lung do not involve even the finest bronchioles, but are limited to minute vessels. It is obvious that these foci cannot *per se* induce cough. As long ago as 1803 Henle pointed out that cough must in such cases depend either on some other complication of the upper respiratory tract, or on irritation of the larynx

by bronchial secretion. It was subsequently shown, experimentally, that stimulation of the larynx and trachea induces cough, which does not occur on stimulation of the parenchyma of the lung with a needle. It has further been experimentally proved that the ciliated epithelium is the main factor in cleansing the respiratory passages, not only of normal fluid mucus, but also of blood clots and viscid secretions. Even with raised head such material has been found to travel upwards to the larynx. Coughing is merely an auxiliary mechanism by which matter, which has been carried up under the glottis, may be forcibly expelled. But though the relation between phthisis and cough is thus shown to be indirect, the influence of the latter on the former is most harmful, for cough irritates the pulmonary tissues surrounding a tuberculous focus, and this leads to exudation of red and white cells into the alveolus and the emigration of tubercle bacilli into surrounding tissues. Cough is therefore one of the most important causes of the spread of tuberculosis from a single miliary focus in the apex to the whole lung, and its reduction is accordingly important in the treatment of phthisis.—*The Medical Review.*

Some of the Clinical Associations of Ocular Paralysis.

By

C. O. HAWTHORNE, M. D.

THERE are many symptoms and evidences of disease to which sufferers will submit for a longer or shorter period of time without putting themselves to the trouble of taking medical advice. But ocular paralysis is hardly among this number. Even the most careless or callous of patients is inconvenienced, or even alarmed, at the onset of the diplopia which such paralysis generally produce. Hence, for the most part, cases of ocular paralysis come promptly under medical observation, and as they are not very infrequent events, abundant opportunities exist for studying their clinical associations and developments. Yet the study is not without difficulties. And perhaps the chief of these resides in the fact that in the majority of cases the ocular paralysis is seen as an isolated event; it has, in short, no clinical associations. On the other hand, it is perfectly well known that in not a few instances an ocular paralysis is merely the first of a series of events which depend on progressive and serious disease of the central nervous system. Hence comes the question in any individual case, marked, and marked only, by an ocular paralysis, is this a condition purely localized and without general significance, or is it the herald of widespread degenerative nervous

disease? If a short and certain method of finding a confident clinical answer to this question could be devised, the difficulties and anxieties which attend diagnosis and prognosis in cases of ocular paralysis would almost entirely disappear. But there is no such short and certain method. Probability there may be, but not certainty, or at least certainty only arrives when through the lapse of time it is seen that the paralysis was a mere isolated event in the patient's clinical history, or that, on the contrary, it was the forerunner of even more serious mischiefs.

The first claim for recognition is that every case of ocular paralysis is a case of nervous disease, and is not, as the patient suffering from diplopia is apt to think, a mere localized affection of the eyes. It demands just as searching and careful a scrutiny of the whole of the nervous system, and indeed of the other systems also, as does a case of hemiplegia, or of muscular atrophy, or of wrist-drop. No one in these instances would be content with a mere nominal diagnosis and the prescription of iodide of potassium; and ocular paralyzes merit at least equal respect. If this is granted, and if by competent investigation the absence of all clinical irregularities other than an ocular paralysis is established, the question above defined at once emerges, and an attempt has to be made to estimate the gravity or otherwise of the position. It has therefore to be asked whether an ocular paralysis can ever be "simple," in the sense of being non-indicative of organic nervous disease. Probably most experienced observers would answer this question in the affirmative, though actual demonstration in any individual case is, in the nature of things, impossible. All the same there are good clinical arguments to support the thesis. First is the experience that other peripheral nerves, and notoriously the facial nerve, are at times damaged by some influence which seems to exert merely a local action, and which, for want of a better name, is usually termed "rheumatism" or "cold"; further, though it is possible that this damage may prove to be permanent, it is often quite temporary, the nerve and the muscles it supplies completely recovering their functions.

If this is true of the seventh cranial nerve it may well be true of the third, or fourth, or sixth. Again, there can be no question that patients do have ocular paralyzes, followed by a partial or complete recovery, and yet live for many years, and even for the remainder of their lives, without any other evidence of an abnormal condition of the nervous system. And, once more, an ocular paralysis and a facial paralysis, though it must be admitted very occasionally, have been known to occur at the same time—to develop together, and to improve together. In

view of these facts, therefore, it seems necessary to admit that an ocular paralysis may be simple or rheumatic. The difficulty is to be sure that this is the explanation in any individual case. All that can be said perhaps in the way of help in this difficulty is, that if the absence of syphilis can be guaranteed if there are no other signs of nervous disease, and if the patient is admittedly "rheumatic" (whatever this may mean), it is a reasonable conclusion for practical purposes that the paralysis is of the simple order. Not that this necessarily means that it is to be of brief duration, and that it is certain to be cured. On the contrary, as already indicated, the damaged nerve, more or less extensively, may be permanently injured, and even when complete restoration is secured this may be a matter of weeks or even of months. It is all the more important to remember this, seeing that some of the ocular paralyzes associated with organic central disease are but slight in degree and transitory in duration. Therefore it does not follow that because a paralysis is decided and prolonged it is necessarily the forerunner of further symptoms, nor does slowness of paralysis and brevity of duration inevitably indicate that anxiety for the future of the nervous system is wholly gratuitous. One other remark in reference to these "simple" or "rheumatic" paralyzes may be added. It is that for the most part such paralyzes are confined either to a single nerve or to a single branch, or possibly neighbouring branches, of one and the same nerve. The rule is not absolute, but it has a fairly commanding range.

Perhaps the next question to ask is whether ocular paralyzes are ever hysterical or functional in character. The answer must certainly be either "never" or well "hardly ever." For the most part the existence of an ocular paralysis is sufficient to justify the conclusion that, even if the case includes an element of hysteria, it is not all hysteria. Still there are occasional records which seem to show that even this rule is not without its exceptions, rare though they be. The safe clinical plan, however, is certainly to adhere to the rule. In this connection mention may be made of myasthenia as a recognized though uncommon cause of ocular paresis. It is just possible to mistake such a condition for hysteria, as the paralysis varies much at different times, coming on with exhaustion and disappearing after rest. The symptoms are bi-lateral, and may include paralysis of the levator palpebræ superioris and the orbicularis palpebrarum, as well as of the more immediate ocular muscles. There are also other evidences of the disease, as the early exhaustion of muscular energy in walking, chewing, swallowing, etc.

Another association of ocular paralysis, apart from the progressive disease of the central nervous system, is with hemicrania. A certain number of sufferers from migraine have with each of their attacks an ocular paralysis and a consequent diplopia. These symptoms may recur again and again over many years, while between the attacks the patient enjoys good health. It seems necessary therefore here to speak of functional ocular paralysis, however unsatisfactory that term may be. But in some cases of recurring headache and diplopia the existence of organic disease has been demonstrated. It may be either central or peripheral. As an example of the former may be quoted a case described by Sir Wm. Gowers, in which periodical headaches and diplopia were proved to be associated with a tubercular focus at the root of the third nerve. There are other instances, too, in which a patient suffering from tubercular disease of the lung or other part has developed an ocular paresis as the result of the development of tubercular nodules in the brain. As an example of a peripheral nerve lesion responsible, apparently, both for hemicrania and a recurring ocular paralysis, may be mentioned some cases to which attention was drawn a few years ago by Dr. James Taylor. In these, the symptoms of headache and diplopia occurred at intervals, the patients having good health between the attacks. After a time, however, the ocular paralysis did not recover, but remained as a permanent change; and in some cases the presence of a tumour in the trunk of the third nerve was demonstrated. The suggestion is that so long as the growth was small it only blocked the nerve current when the nerve was congested during an attack of migraine; gradually the growth of the tumour produced a greater degree of interference with the structure and functions of the nerve, and in this way a permanent paralysis was produced.

It may therefore be said that "simple" ocular paralysis as the result of "cold" or "rheumatism" is a fairly well established condition; that hysterical ocular paralysis is doubtful or more than doubtful; and that myasthenia and migraine (conditions of doubtful organic significance), each in its own fashion, may lead to ocular muscular defects.

Here, then, are a number of ocular paralyses occurring apart from organic disease of the central nervous system; and the list can be still further extended. Diphtheria, though frequently causing paralysis of the ciliary muscle and sometimes of the sphincter iridis, rarely attacks the external muscles of the eyeball. But it does so sometimes. The same is true of diabetes. It is true also of chronic alcoholism. And presumably in all these instances immediate lesion is a peripheral neuritis. Another rare exhibition of ocular paralysis is seen in chlorosis in

connection with optic neuritis. To find a lesion at once probable in chlorosis and also competent to explain the occurrence of both optic neuritis and an ocular paralysis is not easy. One suggestion is that there is a limited thrombosis of some of the intracranial veins or sinuses; and that this, or the resulting cedema or softening which may attend the obstruction of the circulation, is responsible for the paresis, the intra-vascular clot acting the part of a "foreign body" and so leading to optic neuritis. Sinus or venous thrombosis is a recognized complication of chlorosis, and this is one of the arguments advanced in support of the above-mentioned hypothesis. The prognosis of an ocular paralysis and of optic neuritis occurring in chlorosis is entirely favourable if the underlying condition of anæmia is recognized and is treated by rest, iron, &c.

No doubt, all of these last-mentioned conditions are, as causes of ocular paralyses, exceptional and uncommon. But it is necessary to bear such possibilities in mind, lest what is a comparatively innocent event may be interpreted as an evidence of gross change in the central nervous system.—*The Polyclinic.*

SURGERY.

The Value of the Radical Cure of Inguinal Hernia.

BY

W. H. BATTLE, F. R. C. S.

Surgeon, St. Thomas's Hospital.

GENTLEMEN,—When I accepted the invitation to give you a short address on some surgical subject of interest, and selected that of the "Value of the radical cure of inguinal hernia," it was not known to me that my colleague Mr. Corner had arranged to speak to you yesterday on this same subject, selecting as his title "the natural cure and mortality of uncomplicated hernia." It was only when the list of selected subjects for the summer session appeared that I learnt this, and my first impulse was to try to arrange for some other topic, but it seemed to me that there was quite enough interest in the subject to occupy two evenings, and that we should probably present it in different ways. In order that there may be less chance of my observations being mere repetitions of what you have already heard, my remarks this evening will be made from a more personal standpoint than I had originally intended they should be.

My acquaintance with the various methods of radical cure extends back to the time when attempts were made to effect a cure by the

method practised at King's College Hospital by Mr. John Wood, and there can be no doubt that in the hands of that surgeon success was not infrequently obtained. This method was not generally adopted by the profession, because it was a difficult operation to do, the published description of it in our text-books was not clearly expressed, and when suppuration ensued, as it did sometimes in those days, the process was apt to be extensive and dangerous. We do not know what the end results were.

I do not allude to this operation because it was the first proposed or even the first attempted, but because it was the first that attracted my attention as a serious effort to solve the problem so frequently presented to us even in those days, without any known solution. When the methods of wound treatment became more satisfactory in consequence mainly of Lister's work, this branch of surgery made rapid progress and our medical journals became full of suggestions regarding new methods, or modifications of methods already published, and although we have now a large number to choose from, their respective merits have been tested by the lapse of time, and most surgeons in London will be found practising one or two of those, known by the name of the inventor of the process, which carry out more or less the principles on which it is considered such operations should be founded in order to attain success.

In speaking of hernia to-day, I may remind you that my remarks are intended to apply only to inguinal hernia in its various manifestations and that femoral, umbilical, ventral, and other forms of the disease are not included. It may be added that in the radical cure of umbilical hernia the operation of the Mayos has proved very satisfactory, and that the operation for femoral hernia which I suggested some years ago has yielded me uniformly good results in practice.

In deciding upon the value of any operation for the cure of reducible inguinal hernia the questions which have to be answered are mainly these:—

- (1) What is the danger to life?
- (2) What is the probability that the operation will be satisfactory as regards a permanent cure?
- (3) Is there any danger from the anæsthetic?
- (4) How long will it take one to get well?
- (5) Shall I have to wear a truss afterwards?
- (6) If the operation is not a complete success shall I be any better for it?
- (7) Will it cause any other rupture to come if this is cured?

Since I began to operate for the radical cure of inguinal hernia, the operation has been performed by myself or under my supervision by my house surgeon some 836 times on 776 patients before the beginning of this month, and a few times since that date. Of these patients, 695 were males (and 81 females), varying very much in age and occupation.

In four instances the patients died after operation, but in none could it be said that the operation, as an operation involving the peritoneum, had proved fatal. No instance of peritonitis is found in any of the *post mortem* accounts of these cases. The operation performed was that of Bassini in each of these four patients, which were as follows:—

In 1902 a man, aged 52, the subject of a large irreducible scrotal hernia of many years standing, underwent operation for radical cure, but died with lung symptoms a few days later. At the necropsy some suppuration was found in the wound, and scattered patches of bronchopneumonia in the lungs.

In 1905, a man aged 26 died suddenly in bed on the tenth day, immediately after telling his neighbour that he never felt better in his life. At the necropsy everything examined appeared to be normal, and there was no trace of suppuration anywhere.

In 1906, a boy aged 2 years and 2 months suffering, from double scrotal hernia, of which the left was very large and not to be restrained by a truss, died on the day after operation for cure of the left hernia. He was a very weakly child, with an umbilical hernia also, and we kept him in bed for three weeks, until in fact he appeared able to stand the operation on the one side. At the operation he appeared to suffer more than usual from shock, and on the following afternoon had a rise of temperature, passed a large fluid evacuation from the bowel, and died about 8.50 p.m. The necropsy did not quite account for this rapidly fatal ending, and it appeared possible that the chloroform had something to do with death.

In 1909, a man aged 48 died on the fifth day after operation from sudden heart failure. He had a history of fainting attacks before admission, but at the *post mortem* nothing was found which in the opinion of the pathologist, would account for death.

In this series of four cases, fatal cases, we can only put down two deaths as directly caused by the operation; in one sepsis was probably responsible, and in the other it was a question whether sepsis or the delayed action of chloroform was the cause. The other men might have died from their heart trouble anywhere at any moment—they appeared to be quite comfortable before the sudden attack of which I have spoken.

Messrs. Bull and Coley, of New York, in a paper printed in the *Journal of the American Medical Association* (September 21, 1907) give their mortality after operation for inguinal and femoral hernia as 5 in 1978 cases or $\frac{1}{4}$ of 1 per cent. sepsis on fourth day or twelfth day. Ether pneumonia on the eighth day, acute septic peritonitis thirty-seven hours after operation, and the fifth probably from scarlatina.

Vincenzo gives an even better record—1,500 operations by Bassini's method, with only one death from ether pneumonia.

There can be no doubt that if it is desired to get the very best results in cases of inguinal hernia you should choose your cases, and not operate when the condition of the patient appears likely to interfere with certain recovery, but this rule will prevent many from obtaining the benefit which they should get from surgery. Quite recently a workman of 57 was sent to me by Dr. McCarthy for a large scrotal hernia on the right side, for which he had been advised to wear a truss at another hospital. He was a big, strong, rather corpulent man, very much handicapped by his hernia, which could not be restrained by the truss which had a very powerful spring. The sac was a very thick one, but the contents were reducible, and Bassini's method of operation was performed. There were no complications met with during the operation, and he is making a satisfactory recovery. I do not know the reason why operation was refused elsewhere, as it had been.

The second question, as to probability of permanency of cure, depends upon factors which it is difficult to define. Taking large numbers of patients, the report varies considerably according to the experience of particular surgeons, and the time which has elapsed since operation. In London we find it very difficult to follow up cases, and therefore cannot give dogmatic answers to this question. Vincenzo, to whom I have just referred, gives ten relapses after 505 operations, when two years had elapsed since operation.

Bull and Coley give nine relapses in 1,185 cases of Bassini's operation for inguinal hernia in the male, and three of them are reported as recovered later after use of a truss.

In my experience of Bassini's operation the results are good, and I have had a very limited number of operations to perform for recurrence. At the present day if operation is required on this account, the patient readily submits to it, and therefore the number of recurrences coincides fairly closely with the operations for that condition. The late Mr. John Langton used to hint that the books of the Truss Society would give reason for thought to those who congratulated themselves on their

wonderful statistics; but if the surgeons whose names I have mentioned (Bull, Coley, and Vincenzo) can obtain such good results, then we may hope to do the same. Most of our subjects are as good material as theirs, and our methods of wound treatment not inferior.

It is possible to obtain some information by an analysis of the operations which had been primarily performed in such instances of recurrence; it is also interesting to note the way in which the wound healed, as it has been asserted that those which suppurate are the most likely to have a recurrence. Jacobson for instance wrote: "In nearly all the relapsed cases some suppuration had occurred, and this is no doubt the main cause of the relapse." In 129 cases operated on in St. Thomas's to the end of 1908 for recurrent inguinal hernia, in only twenty five was there a reliable and definite statement that the wound suppurated, whilst in the great majority it was clearly proved that it did not suppurate. Should suppuration occur, and the wound be subjected to unusual strain, from a cough for instance, then weakness may result, but even then it may not be more than temporary. I recall a case I operated on by Bank's method some twenty years ago in which suppuration was extensive; but the result ten years later was perfect. Possibly, in this instance, the defects of Bank's operation were made good by the excess of scar tissue. There are few surgeons who still employ Bank's method of operation, chiefly because it has not fulfilled its first promise. In the earlier days of radical cure for inguinal hernia I employed it in some 120 cases, but discontinued its use on finding that its author had given it up in his own practice. Its chief defect was that one could not be quite certain that the ligature was applied to the highest point on the neck of the sac.

There are two instances in the series of recurrent hernia in the list from St. Thomas's which are misplaced, for they are examples of direct hernia occurring on the same side as that on which Bank's operation had been performed earlier, probably for indirect hernia; they are examples of newly-formed hernia coming at a weak spot in the canal, a spot which had been unaffected by the first operation.

There has recently been a tendency amongst some surgeons to perform the operation which is called by the name of Foster; it is indistinguishable, however, from one invented by Bull and Coley of New York, and differs from Bassini's in the fact that the conjoined tendon is sutured in front of the cord instead of behind it.

In both the sac is obliterated as high as possible, and it is essential that this should be done in all operations for the radical cure of inguinal hernia. So important is this part of the operation that it has recently been

advocated anew as the only step needed to secure a successful result. I cannot, however, accept this as all-sufficient, for even when this treatment of the sac is followed by suturing of structures below, recurrence is sometimes met with. In the method of Bassini there is also the replacement of the internal ring outwards to its normal position as much as possible. The best way to manage the testis is often a question of moment even in cases where there is no misplacement or retention of that organ, for it is the presence of the cord that causes the difficulty in effecting a radical cure in males. A recurrence after operation in the female is almost unknown: I have only once had to treat a recurrent inguinal hernia in a woman, and there was no doubt this relapse had resulted from the failure of the surgeon to find the sac at the first operation; the fact that the sac could not be found was stated in the original notes. The success of a radical cure when there is no cord is so fully recognized that in some difficult cases, and in some cases of recurrence, it has been proposed to excise the testis as part of the operation, and I have done it more than once with the consent of the patient, and to his undoubted benefit. When the testis is undeveloped, undescended and misplaced, it can usually be brought into the scrotum and should very rarely be excised. The methods by which it is kept in position, after it has been brought down vary. If the cord be freely divided, the body of testis will usually come well down and remain without loss of vitality in the place prepared for it by the surgeon's finger. The operation should be done early for boys with retained testis; the chance of development is better. If both testis are atrophied and small, whilst the cord is inadequate in length, then they should be placed within the abdomen and not excised.

(3) The question of the anæsthetic must be considered, for it may have a distinct bearing on the mortality of the operation. Quite recently there has been more than one death in one of our Children's Hospitals from the use of chloroform. In my practice, both hospital and private, ether is used mostly by the open method, and, although there have been a few cases of ether pneumonia recorded, there have been no deaths. My rule is never to have chloroform administered to any of my patients without special consideration. It is better for patient and surgeon that the former should be under a general anæsthetic for the operation, but there are cases in which a local anæsthetic must be tried or spinal anæsthesia resorted to.

In the case of a railway guard, aged 58, who had a left inguinal hernia which caused him much distress, and which would have necessitated the resignation of his post before he was fully qualified for pension, I used local anæsthesia. This man had a bluish complexion, chronic bronchi-

the dilated right heart with irregular and intermittent pulse, his liver was large and there was some albuminuria, so that he was not a good subject. I must confess that I shirked the operation, but when good surgical instrument makers had failed to provide him with a truss that would keep up the rupture after six attempts. I felt compelled to do what I could for him; and was rewarded by his recovery and expressions of gratitude.

(4) As a rule the patients are got up, out of bed, on the tenth day (in hospital) after operation, and leave on the 14th. In private they are kept under observation for a slightly longer time, and sometimes massage is employed to the limbs. Children may be sent home early, viz., at the end of a week.

(5) The patient who has undergone the operation for radical cure is certainly the better for it. He will probably become sound again, fit for manual work, and able to take part in the games and exercises usual at his age. If he is nervous he will be quite safe with a light truss, having no fear of descent of his hernia should the truss break, or be discontinued at times. There is no likelihood of strangulation after a radical cure even should the hernia recur.

(6) There seems to be a disposition on the part of patients with one hernia to develop another on the other side, and this tendency is especially marked when the hernia which first appears is inguinal, and on the left side. It is well, therefore, to examine carefully all cases of left-sided hernia for the possibility of another hernia at one of the usual openings. The operation does not cause the second hernia, the tendency is there already, and it would have developed sooner or later; be certain that it is not there at the time of the operation.

One is often asked as to the best age for operation, but far more frequently the question is whether patients of a particular age may undergo such treatment. It is always best to operate during the earlier years of life, and although boys and girls may be left for some years to try the effect of time and the continued use of a good truss, this is so very uncertain in its curative effects that the kindest thing for the child is to submit him to the radical cure, and not waste time and money in a truss or trusses, which are very annoying to children, and sometimes difficult to manage. In the number of cases operated on have been many who have had the operation performed below 5 years, and even 1 year of age, and they have all done well.

On the other hand, I have performed Bassini's operation three times for men 76 years old. In the first case, sent to me by Dr. Copeland,

the applicant was going to be married, and wished to have a scrotal hernia on the left side cured. In the second instance a hernia of the left scrotum was present with a left semilunar protrusion, and they were both treated at the same sitting. He returned in less than a year for the removal of the prostate, and again made a good recovery. In the third instance, still more recently under care, the patient was a clergyman, strong and active for his years, suffering from two large herniæ, a left scrotal and a right direct. Dr. Willans, who advised operation, did so because the man was exceptionally strong, being able to walk 25 miles a day, and take part in village cricket, &c. Both sides were operated on by Bassini's method, and beyond troublesome sickness, the result of his anæsthetic, recovery was uninterrupted, and he has gone home happier than he has been for a long time. One of these herniæ had been present for twenty years, and he had done his best with a truss for that time.

The operation of radical cure may be said to be of great value. Perhaps some of you have seen the distress which is caused by a hernia in later life, or during illness, when its descent, and perhaps strangulation, may give the greatest anxiety and turn the scale against the recovery of the patient. In one case which I saw in consultation the man was over 60 years of age, extremely stout, lying propped up in bed, with difficult breathing, a dilated right heart, dropsy of the peritoneum and lower extremities. His truss had failed to keep up a hernia which was a large scrotal one, and usually reducible. It had been down the day before I saw him, and with difficulty reduced. In consequence of the uselessness of his truss and frequent cough, there was a constant fear of another descent of the rupture, with possible strangulation, and speedy death. He had had this hernia for fifty years, but no attempt had been made to put it right.

The numbers in which patients apply at the hospitals for the relief of this condition increase from year to year, and at the same time the numbers admitted for strangulation diminish. This is strikingly shown by Mr. Adams, recently resident assistant surgeon, in a paper which appears in this month's *St. Thomas's Hospital Gazette*.

	1899		1909	
	Strangulated.	Unstrangulated.	Strangulated.	Unstrangulated.
Inguinal ..	20	185	16	434
Femoral ..	20	18	14	44
Umbilical ..	12	7	3	25
Ventral ..	5	6	1	29

In other words, one out of ten patients with inguinal hernia waited until he suffered from strangulation in 1899, before applying for relief.

whereas only one in twenty-eight patients put it off till that occurrence in 1909. This shows that the general public appreciates the benefits of operation. There still, however, exists a feeling amongst some of the better classes that the operation is a severe one, and all kinds of attempts are made to avoid it. Sometimes they have been advised to undergo treatment by Sandow's exercises, a plan which does not long give satisfaction to the patient, especially if the hernia is irreducible. I have done the various operations for radical cure which are known, with few exceptions, and retain a liking for the method of Bassini. In the list of recurrent hernia from St. Thomas's Hospital Reports from 1898 to 1908 inclusive, four had been done by Banks' method (none are recorded after 1900), twelve by MacEwen's method (none after 1903), one by Halstead's method (1899), sixteen by Kocher's method, twenty-eight by Bassini's method (since 1900), seventeen by Foster's method (since 1904). In the others it was not possible to say always what had been done, but in most there is no doubt the sac had been removed. As a Bassini had been more extensively practised in the hospital than any other operation, the result comes out very well in favour of that operation. I think it most closely restores the parts to their original relationship.

In seventy-five of the patients under my care the operation was necessary, because of the irreducible nature of the hernia, and the period during which it had been irreducible varied from a few days to many years. It was met with in very few cases where the sac was undoubtedly of a congenital character. In by far the majority the cause of irreducibility was the presence of adherent omentum in the sac, and omentum had to be removed to a greater or lesser extent in some fifty of these; in a very few the omentum was "balled" and irreducible in consequence of chronic inflammatory changes, which in one had progressed to the formation of a calcareous deposit.

In one there had been engorgement of the sigmoid flexure; in two the cæcum had slipped down. In two there was also a hernia of the bladder, and in another a double hernia of the ovaries. In only two was there difficulty in reduction, owing to adhesions of the small intestine.

Badly fitting trusses, or trusses with springs that were too strong, appeared responsible for a large number of these cases, pressure having excited a local inflammation sometimes very severe.

In the cases of irreducible hernia a hydrocele of the sac was common, and required no treatment special to itself.

In the case of five children tuberculosis of the sac was present, with a generalized tuberculosis of the peritoneal lining of the contents of the

abdomen. In none of them was there tuberculosis of the lungs, and, although in two the thickened sac and presence of irregular swelling of the abdomen gave evidence of the disease, no symptoms were present to draw attention to it. Chronic abscess formed about the ligatured neck of the sac in two cases, but the cure appeared satisfactory in spite of this; the abscess did not form until some weeks after the operation. The effect, if any, on the condition of the peritoneal disease cannot be stated; it was not, however, in any way harmful.

There is one peculiarity in my technique which I find to be condemned by some operators, and that is the employment of silk for ligatures and for deep stitches. I use it because I think it to be more satisfactory than catgut, as it is stronger and does not become absorbed so quickly. It is more easily rendered sterile, and that is a great advantage, especially in country practice.

Formerly, I found that sinuses were apt to form in a variable number of cases; this is a rare occurrence now, with silk prepared and used in the hospital, nor elsewhere if handed by an assistant who uses gloves.

The number of operations done at the same time as the radical cure, or during the patient's residence in the hospital, varied very much, the principal being operations for varicose veins, varicocele, other hernias, circumcision, tonsils and adenoids, &c.—*The Polyclinic*.

Dangers in the Removal of Tonsils and Adenoids.

LINDLEY SEWEL, M.B. B.S.:—Removal of enlarged tonsils and adenoids is undertaken lightly, and regarded as a trivial procedure. Accidents are rare, certainly, but the majority are never reported.

Hæmorrhage.—Alarming and at times fatal hæmorrhage after operation constitutes the most frequent danger. The writer found 19 cases reported of death from this cause and upwards of 50 other cases of severe hæmorrhage. In the majority of cases the site of the hæmorrhage was the tonsillar wound. Severe bleeding may occur from the naso-pharynx and Dupuy reports 38 cases with 11 fatal results after the removal of adenoids. The hæmorrhage usually begins in the first 24 hours but the 4th or 5th day is not infrequent and it may be as late as the 12th day. The causes of the hæmorrhage are local and general. Of the latter, the most dangerous and most fatal is hæmophilia. The majority of deaths from bleeding may be put down to it. Other general causes are weakness and malnutrition, lymphadenoma, exophthalmic goitre, the anæmias and menstruation. Some cases of hæmorrhage are

reported in which operation had been performed during the menstrual period.

Of the local causes the most common are due to abnormalities in blood-vessels, e.g., (1) an anomalous ascending pharyngeal artery, (2) an anomalous tonsillar artery, (3) a large artery which occasionally runs in the anterior pillar, (4) an enlarged venous plexus at the lower border of the tonsil. The internal carotid has been injured once (Smiegelow). Following the removal of adenoids there was an immediate large gush of blood, the patient dying at once. The necropsy showed that the internal carotid had been pushed out of its position into the naso-pharynx by enlarged lymphatic glands. The ascending pharyngeal artery sometimes ascends at the junction of the lateral and posterior pharyngeal walls and is here in danger of wounding from the incautious operator, who leaves the middle line of the pharynx. Unduly prominent Eustachian tubes, enlarged turbinals, projecting vomer or a vomerian crest are all liable to injury and to give rise to subsequent hæmorrhage. In some of the cases the extreme measure of ligaturing the internal carotid artery had to be resorted to. Chevalier Jackson states that he has been compelled to perform this operation 6 times.

In 2 cases tracheotomy had to be performed owing to prolonged glottic spasm with collapse and cyanosis. In one in which the operation had been performed in the lateral posture blood had entered the larynx.

Aural Affections.—Since the douching of the nose and naso-pharynx which was once common after operations has been discontinued, acute otitis media rarely follows removal of adenoids. It is, however, occasionally met with, and nearly always in children who have not been confined to the house for some days after the operation. Two cases are reported of acute mastoiditis resulting, with in one case the further complication of thrombosis of the lateral sinus. The writer has seen one case in which the mouth of the Eustachian tube had been partly cut away and the tube had been completely closed in by the cicatrix, causing a permanent deafness.

Torticollis.—As a result of infected and enlarged inflammatory cervical glands the spinal accessory nerve may become pressed upon and torticollis result. This is nearly always a temporary affection lasting a few weeks. In a case of the writer's, in a boy, aged 12, the condition came on on the 4th day after the removal of adenoids and persisted 5 weeks, when it disappeared.

Enlarged Cervical Glands.—Many cases of adenoids exhibit enlarged cervical glands; after the operation these frequently become ten-

lar and enlarge. There is a certain amount of oedema and redness of the overlying skin and in rare cases suppuration may occur.

Cellulitis.—Accompanying the Adenitis, but occasionally apart from it, a diffuse brawny infiltration of the skin and underlying tissues occurs below and about the angle of the jaw and mastoid process. This usually lasts 3 or 4 days and completely disappears.

Retro-pharyngeal Abscess.—This complication, due to septic infection of the retro-pharyngeal glands, is rare, although several cases are recorded. Probably the glands were already the seat of inflammatory changes which were accentuated or lighted up again as a result of the operative interference.

Broken Instruments.—Two cases are reported. In one the broken blade of an adenoid curette was swallowed and reappeared per rectum three days later; it apparently caused no damage. In the other case the broken blade was held in the naso-pharynx and removed with difficulty.

Injuries to Fauces.—The writer has seen one case in which the whole uvula had been cut away and another in which a part was missing. In another case as a result of severe injury to the posterior pillar and soft palate, the velum had become adherent to the post-pharyngeal wall and the passages to the naso-pharynx closed on one side of the uvula. Such injuries are due no doubt in part to unskilful operating, but mainly to faulty anaesthesia which does not keep the child quiet enough and the fauces relaxed.

Occasionally paresis of the soft palate follows operation. The writer has seen two cases, one lasting about 12 days and the other three weeks. In both cases anaesthesia had not been very good and the manipulations were rather rough in consequence of movements of the patients.

Septic Infection and Rash.—Eruptions following removal of tonsils and adenoids have been specially studied by Wingrave who records 34 cases. The rash appears on the second or third day and is either papular roseolar, or erythematous. It usually attacks the neck, chest and abdomen, but may extend to the face and limbs. The eruption lasts from two to five days and disappears without desquamation but sometimes associated with intense itching. The general disturbance is as a rule slight, although malaise and irritability may occur with occasional vomiting. The temperature may reach 101° , but usually is under 100° . The rash is probably an indication of a mild toxæmia for the operation affords a large area for absorption.

A severe case of acute general sepsis is reported by Schraum. A girl, aged 6, 4 days after operation, suffered from chilliness and headache,

with distended abdomen. A purulent discharge came from the nose and there was also a cough with moist rales heard over both lungs. The temperature rose to 104° , pulse 140, and respirations 38. The symptoms had almost subsided by the 9th day.

Putnam and Wilcox each report cases of purulent meningitis with fatal results; and Colly a case of endocarditis. Convulsions occasionally follow operation and have been known to lead to a fatal result. Under chloroform anaesthesia considerable risk is run in the removal of tonsils and adenoids.—*Medical Chronicle.*

THERAPEUTICS.

Deaths following Injection of Arsenobenzol ("Salvarsan") in Diseases of the Heart and Vessels.

Great attention has been paid to the action of salvarsan on the heart and circulation, especially since the intravenous method has been generally adopted, owing to the almost constant occurrence of local necrosis after intra-muscular and subcutaneous injections. The results of many thousand injections show that salvarsan, if certain precautions are adopted, has no ill effect on the healthy heart or other organs. The precautions are (1) the dose for intravenous injection should not exceed 0.3 gm.; (2) the injection should be made slowly; (3) plenty of liquid should be used for its solution; and (4) the reaction of the solution must not be acid. An acid solution of salvarsan forms with the blood a flocculent, muddy precipitate and is highly dangerous. Schottmuller reported a case in which a syphilitic man received an intravenous injection of 0.8 gm. of salvarsan in strongly acid solution, only 100 cc. of liquid being employed. Slight collapse occurred while the injection was proceeding and death from progressive dyspnoea followed 18 hours later.

Prof. Ehrlich foresaw the possible danger of employing salvarsan in cases of severe heart disease. Several fatal cases have now been reported. Either the disease of the heart was latent or the symptoms were so slight and compensation so good that it was held not to contraindicate the treatment. In addition to the reported cases Prof. Ehrlich has received numerous notices of fatal results. A great number of these concern patients with cerebral lesions and syphilitic infants and are not dealt with in this paper. The remainder consists of cases in which cardiac or circulatory disease was found either in vivo or post mortem, often in conjunction with syphilis of the central nervous system. The writer, at Prof. Ehrlich's wish, now shortly summarizes these cases, amounting in all to 18. An analysis of the cases shows that in 3 the

salvarsan treatment did not hasten death, which occurred some time (in 2 cases on the ninth day and after the fifth week respectively) after the injection from intercurrent diseases (pneumonia and septicæmia arising from a bed sore). In one case an injection of 0.4 gm. of salvarsan was given in a case of aortic aneurysm. Death occurred on the ninth day. Post mortem, in addition to the aneurysm, infarcts of the spleen and kidneys and pneumonia of the left base were found.

In 3 other cases death could not be attributed to the treatment as the injection was given when the patient was moribund or in a hopeless condition, usually to satisfy the friends. In another the patient was in an advanced stage of paralysis and had had 3 attacks of apoplexy. Death occurred with symptoms of cardiac paralysis on the fifth day after the injection, but Martius attributes it to the disease and not to the treatment.

In a case of syphilis complicated by severe diabetes, coma appeared a few hours after the injection and proved rapidly fatal. In another case death occurred from rupture of a deeply seated, unsuspected thoracic aneurysm, while the injection was being made. Though these may be coincidences, it is safer to regard severe diabetes and aneurysm as contra-indications to the treatment.

In a woman, aged 56, with aortic regurgitation secondary to syphilitic aortitis there were attacks of angina pectoris. After failure of mercurial inunctions 0.5 gm. of a neutral suspension of salvarsan was injected subcutaneously between the scapulæ. The anginal attacks disappeared for a time but a fortnight later a mild attack occurred. On the next day she was discharged from hospital. Two days later—19 days after the injection—she died suddenly. The writer's interpretation of this case is that the early recurrence of the anginal attacks was due to insufficient dosage or deficient absorption, which is not uncommon under subcutaneous administration. Numerous examples of the good results of salvarsan in metasyphilitic circulatory diseases—especially angina pectoris—have been published.

In a case of locomotor ataxy combined with syphilitic aortitis, dilatation of the aorta, and cardiac hypertrophy, an intragluteal injection of 0.6 gm. of salvarsan for the relief of gastric crises was given without effect. It was otherwise well borne, but severe hæmorrhagic pemphigus appeared and proved fatal 3 weeks later. Post mortem the heart showed only secondary hypertrophy. Prof. Ehrlich regards the combination of locomotor ataxy and diseases of the heart and vessels as contra-indications to salvarsan treatment.

There remain 7 cases in which death occurred at varying intervals after the injection of salvarsan with symptoms of sudden or progressive heart failure. In 3 of these there were manifest signs of disease of the heart or vessels, although the cardiac disease appeared to be completely compensated. In 2 cases there was aortic regurgitation which had given rise to no symptoms. In one case a ringing aortic second sound was heard, but there were no cardiac symptoms. In one case slight precordial pain was present with no physical signs of heart disease. In 3 of the 7 cases the heart was held to be healthy. Nevertheless, in all 7 cases more or less extensive pathological changes in the heart or circulatory system were found post mortem.

The dose of salvarsan and the method of injection were not uniform in these 7 cases and in most no information was forthcoming as to the reaction of the solution. In one case fatal collapse occurred 4 hours after an intravenous injection of salvarsan. Nephritis, cardiac hypertrophy, arteriosclerosis, cerebral hæmorrhage, combined with paralysis present during life, according to the writer, accounted for death. In another case hypoplasia of the heart and aorta was found post mortem. With a perfectly healthy heart the writer says that salvarsan may be injected in out-patients, but as slight degrees of heart disease may be overlooked it is desirable to keep all patients in bed for some days. Thus in one fatal case a woman, immediately after an intravenous injection, performed heavy garden work; she died suddenly 3 days later with pulmonary embolism. In the remaining 3 cases there were syphilitic aortitis, coronary sclerosis, and myocarditis. In all death was attributable to the toxic action of salvarsan on a diseased myocardium.

Even with hearts slightly weakened by alcohol or tobacco, alarming, though not fatal, collapse has occurred. Diseases of the blood vessels alone are not necessary contra-indications. This is proved by the good results obtained in uncomplicated syphilitic angina pectoris. But the combination of syphilitic aortitis with coronary sclerosis and myocardial degeneration is especially dangerous. In no case should salvarsan be injected if the administration of chloroform would be considered dangerous.—*The Medical Review*.

OBSTETRICS AND GYNÆCOLOGY.

Five Cæsarean Sections on the Same Woman.

CHARLES M. GREEN:—A negress, aged 16, 4 feet 7 inches in height, entered the Boston Lying-in-Hospital on Feb. 4, 1898, having been in primiparous labour 22 hours. The os was fully dilated, the membranes

unruptured, the unengaged head presented, O. L. A., and the foetal heart rate was 138. Pelvimetry showed a generally contracted, flat, rachitic pelvis, with a true conjugate at the brim of 6.5 cm. Caesarean section was performed. The uterine incision was closed with two layers of silk sutures, and the abdomen with mass sutures of silkworm gut. After the operation there was an irregular temperature of 100°-102°, and on Feb. 27 the abdominal wound broke down. The wound was opened and drained, and gradually closed by granulation. After protracted convalescence she was discharged well on May 3rd. She was advised to enter for a timely section in the event of subsequent pregnancy.

On Mar. 16, 1901, she re-entered, having been in labour nine hours. The os was dilated one inch, the membranes were unruptured, the head presented O. L. A., and the foetal heart rate was 138. Caesarean section was performed. The incision was made in the old scar and the uterus opened through adhesions without entering the peritoneal cavity. It was not easy to differentiate the tissues in the uterine and abdominal walls; but the incision was closed with two layers of silk suture, with superficial sutures of silkworm gut. Rapid convalescence followed. On Apr. 16 she was advised to enter the hospital before the advent of labour, should she again become pregnant.

On Aug. 6, 1903, she entered apparently at term, but not in labour. For the third time the head presented O. L. A., and the foetal heart rate was 132. Labour pains began on Aug. 7, and section was performed. The uterus was opened through scar tissue and adhesions without entering the peritoneum. The incision was closed with one layer of silk sutures, and one layer of silkworm gut. Convalescence was unevenful.

On Oct. 17, 1906, she entered for the fourth time, apparently at term. She was not in labour, and no vaginal examination was made. Palpation disclosed a breech presentation, S. D. A. The uterus was opened and closed as before, except that linen sutures were used instead of silk. After an uneventful convalescence the mother was discharged well on Nov. 13.

She entered for the fifth time on Feb. 10, 1909, apparently at term, but not in labour, and was not examined vaginally. Palpation showed twin pregnancy,—one baby presenting the head, O. L. A., with heart rate 140, the other presenting the breech, S. D. P., with rate of 164. After two days of preparation the woman was delivered by Caesarean section. The breech baby was delivered first, and weighed 5lb. 9 oz.; the other weighed 5lb. 4 oz. The incision was closed with two layers of linen sutures and one of silkworm gut. Convalescence was normal.

The performance of Caesarean section for the fifth time on the same woman is not unique, but no case appears to have been reported in which all the babies did well. It is the policy of the Boston Lying-in Hospital never to remove or impair the function of healthy organs to prevent subsequent pregnancy. This attitude does not seem to have met with general professional approval. It is held by a majority of obstetric surgeons that it is unfair to a woman to subject her for a second time to the risk of the Caesarean operation. The result of the sloughing of the utero-abdominal incision after the first section was a firm, broad, high fixation of the uterus to the abdominal wall, so that in the subsequent sections the peritoneal cavity was not entered.

The abnormal position of the uterus, with the fundus reaching nearly to the umbilicus, produced no unpleasant symptoms. It therefore seemed desirable in other cases to try the effect of producing a sufficiently long and broad artificial utero-abdominal fixation with a view to subsequent extraperitoneal section. The writer did this in two young primiparae with absolute indication for Caesarean section. They were discharged in good condition and he awaits a second section with interest.—*Boston Medical & Surgical Journal*.

Treatment of the Excessive Vomiting of Pregnancy.

James H. Martin, M.D.:—While the writer was senior house-surgeon in the Glasgow Maternity and Women's Hospital 17 cases of the excessive vomiting of pregnancy were admitted. All the patients had for several weeks been treated with the usual "stomach drugs," and in two cases rectal feeding had been tried without improvement. One patient was admitted very ill and died. She could retain nutriment neither by the mouth nor the rectum.

The history was carefully gone into. A thorough examination was made, particular attention being paid to the alimentary canal, vagina, uterus, and appendages. Bad teeth and chronic constipation were found associated in every case.

The patient was strictly confined to bed. The stomach was washed out thoroughly with warm water at a temperature of 100°. The large quantity of mucus obtained was surprising. Sips of cold water were allowed that night, and an enema of soap and water was administered. For several days the patients were put on peptonized milk and milk and soda, and were thereafter given light diet. The patients were not allowed up until they had been on light diet for 2 days. A powder containing 1 grain of mercury with chalk and 3 of sodium bicarbonate

was given thrice daily. For chronic constipation, in conjunction with the above powder, magnesium sulphate in hot water every second morning proved the best aperient. If a satisfactory motion was not obtained, then a soap and water enema was given. For the septic condition of the mouth a wash of carbolic acid solution 1 to 80 was used frequently and always immediately before and immediately after food.

This treatment was quite successful in the 16 cases, the average duration of residence in the hospital being 17 days. One patient was treated for about 10 days with the textbook drugs without improvement. She was then treated as above and at once improved. She had no return of vomiting and went to term. In another case there was retroversion of the uterus with tendency to prolapse; the uterus was not interfered with and she made a complete recovery. In 5 cases there was a well marked acetone odour.—*The British Medical Journal*.

Cases and Comments.

Gonorrhœa.

BY

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Recently a number of cases of gonorrhœa having come under my observation, many of which were private, I resolved to give the subject careful consideration, with the result appended below, which I think is very satisfactory.

I was struck at first with the fact that many cases had a marked tendency to become chronic, and many of these were not of long standing, nor relapses. Thus one case remained an anterior urethritis, for only two days, then the extension of infection to the posterior urethra remained for three weeks, in spite of treatment, and in spite of the fact that the attack was not severe, and there were no complications.

I thought then, and still maintain, that much if not all the reason for this depends upon the manner in which treatment is conducted, this referring especially to irrigation.

There is one important fact, which should never be lost sight of in the treatment of gonorrhœa, *viz.*, in some individuals the urethral canal is naturally of an extremely sensitive nature; which condition is augmented several fold in an inflammatory condition, and especially so in a septic inflammatory state.

With such patients, lavage irrigation, or injection with a small hand syringe, performed under the ordinary every day method, are both useless and harmful; for not only does reflex phenomena bar the action intended to be produced, but also has a marked derogatory effect upon the system. To elucidate this statement of mine, I will illustrate the case of a certain patient who had a very sensitive urethral canal. His attack of gonorrhœa was by no means of a severe type, but the mere attempt at syringing or lavage caused a very "sick feeling" and a fair amount of syncope. He had no complication, he complained of no pain during the process of injection, and his was only an anterior affection. He lost weight, and went quite off his food. The above symptoms having occurred three or four times, I resolved to make the urethral canal anæsthetic with cocaine before proceeding with the treatment; which was then borne alright; but the previous experiences had so told on the man that the first irrigation to be given after anæsthetization, which was not understood by him, tended to have a bad effect, in as much as he so expected the "sick feeling and faintness" that voluntarily he was bringing it on. Now, whenever I have a case with a hypersensitive urethra, no soon as this condition is made evident, I give the second and following irrigations preceded by an injection of cocaine.

I further more believe in personal supervision of these irrigations; for an ignorant patient will never be able to perform this operation upon himself thoroughly, no matter how well he has been lectured; and when it comes to posterior irrigation, this supervision becomes more imperative, even in the case of an educated person; for there will, and of a necessity always must be, a certain amount of discomfort amounting to pain or very nearly so, which in consequence must bring about reflex and voluntary actions to resist or overcome the sensation, and which thus prevents the main object—thorough flushing out—of the lavage treatment. In the case of a sensitive, highly strong, neurasthenic person this can be better understood than described; while another factor, pain and anxiety of the disease, should not be lost sight of as it tends to have an injurious effect upon the constitution and system in general and greatly retards the progress of treatment. The physician or surgeon must so influence the patient as to gain his absolute confidence; he should get the patient to trust him, and all incredulousness and shyness must be overcome.

To briefly explain the disease, the phenomena going on, and the effect of treatment is a routine that should always be adopted, and in this way when entire confidence is gained, the patient will diligently persist and persevere in his treatment, and thus himself greatly help

himself. Though I mention this and have full conviction of the benefits derived, I am certain there are many who will ridicule my statement and laugh at the idea of the influence of suggestion. At this present era so much is known about venereal disease by the lay folk, that they all take an intelligent view of the subject, and it entirely rests with the manner in which the practitioner has executed himself with his patient, whether the result of treatment is to be a phenomenal success or not.

Briefly then, the procedure I have found most excellent is as follows:—

On admission. Take a full history, ascertaining all particulars. Take two smears and examine them microscopically to confirm the diagnosis. Examine thoroughly a sample of the urine. This should be done every day, not only inspecting for threads and pus cells, but noting also the character, colour, specific gravity alkalinity, or acidity. The patient has a good hot bath, and is rigidly kept in bed. Medicinal treatment for the day is Calomel gr. v, followed four hours after by Mag. Sulph. $\frac{3}{ii}$ in $\frac{3}{ii}$ lukewarm water. Mist. Soda Sal. (gr. xv) T. D. S.

Diet consists of Milk and Barley water. This diet is continued until there is no discharge from the penis on squeezing same in an upward direction in the morning; then, before a liberal full diet is given, the patient for at least two days should have some bread and butter, a pint of chicken tea, and a custard or rice-pudding, in addition to the milk and barley water.

The next day, patient is given an ounce injection of half volume strength of Hydrogen Peroxide, which is retained for five minutes. For this the bladder should not have been previously emptied. An irrigation of at least three pints of Potass. Permanganate made up in warm water to the strength of 1 in 3000 is then given *very slowly*. This I consider very essential as it keeps the antiseptic for a longer period in intimate contact with the cocci, and slowly but more thoroughly flushes out suppurating areas, lacunæ, fissures, folds of mucous membrane, &c., &c. The following mixture is given thrice daily:—

R Ol. Santal. m. x
Pot. Cit. gr. x
Spt. Etheris Nit. m. xv
Liq. Potass. m. x
Mucilage Acacia qs
Inf. Buccu ad $\frac{3}{i}$ misce.

If the urine tends to be alkaline— and in such cases I have always observed a longer period of illness even if the discharge is not severe

—one dose of Soda Salicylas (g. xx) is given at night about two hours after the last meal or at bed time.

On the next two days an irrigation of K_2MNO_4 morning and evening are given; strength 1-2000.

The next day another one ounce half volume strength of H_2O_2 injection is given and retained for ten or fifteen minutes, followed by an irrigation of 1-3000 K_2MNO_4 .

Then irrigations of 1-2000 twice a day are kept up for three days. On the 7th and 8th days the urethral canal is dilated with bougies, and the irrigations for the two following days are given at the strength of 1 in 1000.

By this day (10th) the patient should be quite clear, cured in fact, unless the infection was of an unusually severe character, and extended posteriorly; even then no discharge should be seen from the penis, but only a few 'threads,' and perhaps pus cells will appear in the urine which come from a deep-seated suppurating inflammation in a lacuna, in which case very gentle prostatic massage and hot hip baths should be resorted to every second day.

The practitioner's great aim should be to prevent posterior urethritis; when this happens, however, and the prostate is also effected, three injections a day of two ounces of a three-grain-to-the ounce solution of Carbazotic Acid is most beneficial, although I must remark that some patients cannot tolerate this drug.

In such cases also, — posterior urethritis — measures should always be adopted to prevent extension of inflammation and infection to the bladder; and I think the routine of washing out the bladder once a day with a weak Quinine and Boric Acid solution, after the last lavage, is a sound prophylaxis, allowing at least two pints of this solution to remain in the bladder at least ten minutes before it is expelled. This should be given to the patient lying down.

Complications, of course, has rapid progress, but treated from the very onset do not make any great difference. The patient should be properly examined, and inspected every day, and his mere word not taken. Very often I have discovered a commencing epididymitis, while as yet there has been no swelling or discomfort, and the patient has experienced no pain.

Before concluding I must make a special remark on the period of incubation; although at present I can offer no tangible reason for it, yet I should like to know if other observers interested in this disease have

noticed the same. In the majority of cases investigated by me, the period of incubation has been between seventeen and twenty days, while in a very small minority it has been between seven and nine.

A few points to be attended to:—

The patient must be kept in a good hygienic state. His body should be sponged down at least once a day. Half a drachm of Izal in a gallon of water used for sponging produces a delightful, refreshing effect.

His surrounding should be clean, bright and airy.

His mattress should not be too soft or too hard.

He should have light, cheerful literature during the daytime to divert his thoughts from his complaint. Care should be taken, by the agency of cheerful visitors allowed at least once a day, to prevent him from worrying about business or private matters. At night he should have a sleeping draught; this in fact should be regularly given as a routine for the first week.

Diet should be given in regular quantities, at regular intervals. Bowels should be kept well regulated. Patients suffering with gonorrhœa, I have observed, have a tendency to constipation; this is probably due, not as much to reflexes caused by the disease, as to lying up in bed, and being on a milk diet. A mild saline aperient every second morning is very beneficial.

THE ANTISEPTIC.

NOVEMBER, 1911.

Sanitarians in Conference.



THE Sanitary Conference held in Bombay, during the second week of this month, under the presidency of the Hon'ble Mr. Butler, Member of the Government of India in charge of the Educational Portfolio, will be fruitful of good to the country if the lines of enquiry adopted by it are pursued with vigour and judgment. Besides the thoughts it has awakened, it will be appreciated, as has been said, for the opportunities it has given to those who are in charge of the sanitary departments in different parts of India to compare experience, to exchange ideas, and, generally, to determine upon a basis of action in each province and centre according to its needs. Research work and hygiene are the two main divisions, remarked Mr. Butler, under which modern sanitation falls. A highly-skilled body of investigators and a zealous corps of active workers to carry into practical effect the conclusions arrived at, are the two essential conditions to be satisfied. With regard to investigation an Indian Research Fund has already been instituted, of which the nucleus is a sum of five lakhs contributed by the Government of India; and the hope is expressed that the public spirit and liberality of the wealthy will supplement this fund to enable the Governing Body to prosecute its labours in the field of Indian sanitation. The Governing Body will shortly elect a Scientific Advisory Board' which will, in turn, form different committees to draw up a regular programme, with a view eventually to enter upon an elaborate campaign of sanitary research. As regards the question of preventing the importation into India of new diseases, the Government of India have already taken action in regard to what are known as sleeping Sickness and Yellow Fever. One of the two officers deputed to Africa to investigate into the former malady is now engaged on a monograph on the subject; and another officer is now in the region of the Panama Canal and of the route that ships passing through that canal will take, examining into the best methods of preventing an invasion of India by Yellow Fever. But it is well at the same time to remember that what has yet been done is but preliminary work, a sort of clearing of the ground for a wide and extensive survey.

The question of the improvement of Indian sanitation has become one of pressing urgency and importance. India has been paying a heavy toll in the shape of high mortality for her neglect. Plague, cholera, small-pox, malaria, dysentery, and tuberculosis, among other diseases, have been the scourges with which this country has long been afflicted. The poverty of the general masses has been a contributory cause, which by its grim reality, has kept them in a state of low vitality and predisposed them to all sorts of diseases; so that the economic condition of the people may be said to be indissolubly interwoven with the problem of Indian sanitation. Mr. Butler rightly said that the forefront of any effective sanitary programme must be first a reasoned account of the conditions and circumstances which affect mortality and the increase and decrease of population; and, secondly, a study of the relative effects of various diseases on personal environment and of the social and economic condition of the people. Ignorance and poverty are the parents of many of the ills the flesh is heir to; and we are glad that Mr. Butler realises the fact that *education is the forerunner of sanitation*. With the spread of education and improvement in the material condition of the people, mortality will surely be reduced and the health of the people improved. Attempts should accordingly be made in these directions. With regard to education, the fact that even among the enlightened classes the elementary ideas of sanitation are little appreciated and seldom acted upon should open the minds of the educational authorities to the necessity of instilling sanitary truths into plastic and youthful minds along with their education in other departments of knowledge. Whatever else may be the fundamental basis of a free system of education, there can be no two opinions that a knowledge of the primary laws and conditions of health should form part of it. If boys and girls grow in a belief in the rudiments of sanitation, the rest of the work is comparatively easy. Pamphlets, leaflets, lectures, frequent conferences in towns and villages between active sanitarians and the people, and concerted action on the part of the officers of the sanitary department and medical practitioners will tend to awaken and develop the sanitary conscience of the people in such a manner as to ensure material and visible improvement on all sides. Organised action, even at this stage, will be productive of satisfactory results. It will tend gradually to the removal of the prejudices and superstitions prevalent among the illiterate and the ignorant. The sanitary officer and the medical man should, besides doing *their own* beneficent work, be instruments of education as well.

It is becoming increasingly manifest that the active sympathy and support of the people should be enlisted for carrying out measures of

sanitary reform. Coercive processes were tried in one province when plague first appeared in the land and failed. Since then the authorities throughout India have felt the necessity of non-official co-operation. And non-official co-operation means, on the part of the sanitary officer, a knowledge of and insight into, the social conditions of the people, their customs, their habits and ways of life, with a view to carrying out changes for the better in every one of these directions and in the environments amidst which they live, move and have their being. It is at the same time a mistaken policy to leave them to their own unaided resources, hoping that time would change their ideals. Progress is not the result of mere conformity, or mere hap-hazard attempt or blind chance, but is always the product of new ideas striving onward against the forces of orthodoxy and reaction. Between the sanitary department and those engaged generally in the field of sanitary reform and the people sympathetic relationship should be established, so that there would be no room for misunderstanding; and the wider the publicity given to accepted truths about sanitation and the intention of the Government and local bodies, the greater will be the results achieved.

Village as well as urban sanitation claims attention at this moment. Cities and towns are compact and manageable areas which could be more effectively dealt with than villages which often lie far apart and out of touch with the progressive elements in the population; and it is well-known that, in spite of their being very sparsely populated, when once an epidemic breaks out the havoc caused is greater than that which occasions panic among urban populations. In the Punjab, for instance, the mortality from malaria, among the rural population, was greater than in several towns in that province. The fact is that in villages remedial and preventive measures would not be easily adopted. Unwholesome or insufficient water-supply, bad drainage, marshy soil, growth of poisonous vegetation, tanks, pools and wells breeding mosquitos and other human pests, the ignorance of the people, their neglect of the ordinary precautions and safeguards,—all these, or several of them combined, assist the rapid spread of infectious and contagious diseases, so much so that sometimes even a whole village is destroyed. In cities and towns congestion and overcrowding, crude architecture, bad water-supply, worse drainage, free vending of unwholesome food stuffs, improper disposal of the daily accumulating rubbish, want of fresh air and other contributory causes help the progress of epidemics. At the Sanitary Conference, Mr. Butler gave appalling figures showing that milk, one of the commonest articles of food, has been responsible for very heavy mortality from tuber-

culosis in cities like Bombay and Calcutta. With regard to such subjects as food supplies, drinking water, drainage, congestion, conservancy and disposal of rubbish, while the people could do little or nothing, the Government, through the sanitary department, are in a position to do a great deal. Doubtless, the Government and local bodies have begun to move in these directions. Model villages, model towns, and even model dwelling-houses, illustrating up-to-date ideas of sanitation and healthy living, are being set up. But in a vast country like India a model town in Bangalore, a model village in the interior of a district, or a few model houses such as those recently built in Madras, cannot be effective agencies in the dissemination of realised sanitary ideas, indeed, unless the policy is carried forward with vigour, determination and persistence. The question that the Government and local bodies have to face, with which, indeed, they are already confronted, is one of funds. Representatives of the people in the Imperial Legislative Council like the Hon'ble Mr. Gokhale, organs of public opinion and public bodies have alike called for more funds. The response has come rather tardily. Last year the Government of India assisted the Provincial revenues, for purposes of sanitation, with a special grant of over a crore of rupees, of which fifty lakhs were given to the Bombay Improvement Trust. With the remaining fifty the rest of India was to rest content. Even Lord Curzon, the other day in the House of Lords, could say nothing against an increased outlay on sanitation. The sanitary needs of the country to which attention has been called by the increasing rate of mortality even in the present unsatisfactory registration of vital statistics, are such that, whatever economy and retrenchment may be effected by the Government of India in other directions, there should be a steady augmentation of expenditure, both under Provincial and Imperial heads, in order to push forward sanitary reforms; and what is more, every pie of the money set apart and ear-marked must be spent, not so much for the purpose of adding to the cost of the Sanitary Department, as has been sometimes the tendency, as to the obvious advantage of the people.

CORRESPONDENCE.

"Vaccination—An Exploded Fad."

SIR,

With deep interest I perused in *The Antiseptic*, of September 1911, an article under the above heading transcribed from the *Hindustan Review*. The writer of the article seems to be Miss L. Loot, the Secretary, National Anti-Vaccination League, London. She appears

on the stage with a flourish of trumpets, and after blowing her own trumpet at every step, she retires with a loud blast of invectives.

Is vaccination really a fad? And has it been exploded as such? History will decide these questions. Dr. H. A. Hare of Philadelphia, in his Text Book of Practice of Medicine, writes: "Although it (vaccinia) was known among those persons who milked these animals (heifers and cows), or otherwise handled them, that the disease could be transmitted from the cow to the human being, and although many of these persons also knew that this transmission protected the human being from small-pox, it was not until Jenner, on May 14, 1796, first inoculated a patient with the contents of a cow-pock, that the preventive influence of vaccination was first tried in a scientific manner. Two years before this an English farmer, by the name of Jesty, inoculated his wife and two children in a similar manner, but at the time no report of the procedure was made. From this small beginning so called vaccination or the inoculation of the human beings with vaccine virus, has spread all over the world, and is a well-recognized procedure, by which millions of lives have been saved. There are a few persons, *not medical men as a rule*, who still express doubt as to its efficacy, but *they are not worthy of credence*, and the statistics of every civilised land prove that vaccination is one of the greatest blessings yet discovered for mankind. Thus in 58,278 cases of variola collected from various sources, occurring in individuals who had been vaccinated, but in whom the "takes" were not known to be good, there were 1,872 deaths, a percentage of 8.35; whereas in 23,360 cases of variola, occurring in individuals who had not been vaccinated, there were 8,682 deaths a percentage of 32.88." These are the facts regarding vaccination, and such is the testimony of doctors, eminent leaders in science founded on statistics. Are these facts "an exploded fad"? Though common sense would say, 'No', yet the common sense of the renowned Secretary of the N. A. V. League, London, seems to view the matter quite otherwise.

Sir William Jenner is a great fool in her eyes, and all the doctors of the world that uphold 'vaccination' are still greater fools. To her, their Degrees and Diplomas are no criterion of learning, and their long years' experience is no consideration for respect and authority. "Surely doctors have not a monopoly of statistical ability. They are mistaken in their beliefs and have all along been wrong in advocating vaccination . . . as for their work done in laboratories being of benefit to suffering humanity, there is very little proof as yet. They still mislead the public with cooked figures and untrue statements." It is, therefore,

high time that all doctors should retire from the field to make room for the common-sense-wallahs. Ye dishonest rogues and liars, in vain did the public entrust you with their care and health; burn your ornamental Diplomas; fling away into deep sea your implements of research that have done so much mischief to the world; set on fire the laboratories that have done no good to the suffering humanity; and erect on their ashes a grand shrine for the goddess of common sense, and prostrate before her and worship her that she might give you brain and inspire you with common sense.

Now let us consider the story of anti vaccinationists. Are the conclusions of Miss Loot well founded? She parades a grand array of statistical figures and thereby seems to think she has already won her point. Do these figures prove anything? They merely indicate the death rate from small pox during the several years. The only inference that can be drawn from these varying figures is that death rate was largely fluctuating between certain limits in those years, indicating the mildness or severity of the epidemic. This is no proof whatever against the protective value of vaccination. Great stress is laid on the high mortality that occurred during the "terrible epidemic which struck the country in 1871," in spite of Mr. Simon's statement "that he believed that 97½ per cent of the population of London under 50 years of age, excluding infants, had either had smallpox or been vaccinated" in that year. This fact again proves only the "terrible" nature of the epidemic, and nothing more. But Miss Loot triumphantly jumps to the conclusion that "if vaccination had been the wonderful protection against small pox it is represented to be, small pox ought to have practically vanished from the country in face of such enormous amount of vaccination." Here her common sense seems to have deserted her before her enthusiasm. Evidently she has forgotten the truth that the large majority of vaccinated cases have no power to confer immunity from small pox on those that are not vaccinated when these are exposed to the infection. The 97½ per cent that were protected either by vaccination or by the previous attack of small pox were all those below 50 years of age, excluding infants. This means that 2½ per cent, or 25,000 persons per million population under 50 years of age were still unprotected besides the large number of infants and those above 50 years of age that were not protected. Is it a wonder then that out of, say, about 30,000 unprotected only 1,012 succumbed to the epidemic of a "terrible" type. Rather it is a marvel that more did not succumb to the "terrible epidemic", and this marvel is really due to the "wonderful protection of vaccination against small-pox." For it can be easily

imagined what the effect of the epidemic would have been in a big town with 30,000 population where not a single individual is protected either by vaccination or by a previous attack of small-pox. The mortality would have been appalling indeed. It is, therefore, not unreasonable to assume that all the 1,012 deaths in 1871 were from the 30,000 unprotected that were thinly scattered among the millions that were protected, and owing to this thin scattering of the unprotected among the protected, the epidemic could not penetrate into every corner to make greater havoc. The protected portion of the population evidently stood like a barrier between the unprotected and the epidemic. For, what evidence is there to show that among the 1,012 victims of small-pox in 1871, there was even one that was previously vaccinated? The correct way of judging the virtues of vaccination is by comparing the mortality among the vaccinated and the non-vaccinated, as Dr. Hobart. A. Hare has done. But the learned opponent of the vaccination, despising the scientific method, has come to grief in her inferences. What a vast difference between the trained sense of the Doctor and the common sense of the layman that would sit in judgment on the doctor!

There is another charge against vaccination. It appears that the "Doctors themselves own that there is no scientific foundation for vaccination, but they point to its results. How thankful the whole medical world would feel if the names of those eminent doctors were revealed. It is strange that those doctors deny scientific foundation and yet point to its results. What is the definition of the word "science"? In Collins Graphic English Dictionary, the word "science" is defined to be "the truth ascertained by observation, experiment, and induction." Does not the history of vaccination fit in with this definition of the word "science"? Jenner observed the truth of the fact that milkmen handling cows and heifers suffering from vaccinia were enjoying immunity from small-pox; he then made experiments by inoculating people with vaccine virus; and found that these also were proof against smallpox; and thence he drew the conclusion verified by the experience of the civilized world that inoculation with vaccine virus confers immunity from smallpox. We wonder which doctors would call this "no scientific foundation". Is judging things by their results unscientific?

Mr. Bechamp's opinion is also pressed into service. We are asked to believe the futility of vaccination because Mr. Bechamp believed so. Why should we accept his verdict? Because Mr. Bechamp was the

discoverer of bacteria. Strange argument! Strange logic! What has the discovery of bacteria to do with the results of vaccination? Miss Loot herself owns that "the question of vaccination can only be decided by an investigation of the experiences of those countries which have adopted the practice." Mr. Bechamp's opinion will be entitled to respect, if he himself had undertaken to make experiments as Jenner did, and found the inefficacy of vaccination as a protective against small-pox in his experience. The medical world will be very thankful to the Secretary of the N. A. V. League if she would publish the results of his experiments and observations on vaccination, if there be any.

Against the protective power of vaccination, it is argued "that bacteria only becomes dangerous when the conditions of life are wrong, and to prevent their degenerating into poisonous germs, free air, cleanliness, and the observation of Nature's Laws generally would suffice." It is no argument against the protective power of vaccination; but it is only a proposal of a choice between two alternatives suggesting that vaccination is inferior of the two and quite unnecessary if "free air, cleanliness and Nature's Laws are observed." It is all good in theory and talk, but in practice it does not come up to the mark. What is excellent in theory, cannot often be realised in practice. Did not the Lord Jesus Christ say. "But he that believeth not shall be damned, and these signs shall follow them that believe: In my name they shall cast out devils; they shall speak with new tongues; they shall take up serpents; and if they shall drink any deadly thing, it shall not hurt them; they shall lay their hands on the sick, and they shall recover." Mark, ch. XVI-16, 17, 18. However true this saying may be, is there any one that will demonstrate the truth of the saying by handling serpents and drinking deadly things with impunity or by speaking with new tongues without previous study? If the saying of the Lord could be realized in practice, there would be no need, in Christendom, for Hospitals, Colleges and anti-vaccine. Numberless Hospitals, countless Druggists shops, ceaseless endeavours of scientists to discover antidotes to poisons, and all the universities of the world are clear proof of the difficulty in realising the true saying of the Lord. To return to our point, it is true that the blood has certain power of resistance against the invading germ of disease, when health is perfect. Free air and cleanliness do conduce to good health. But these alone are not sufficient for maintaining perfect health. "Nature's Laws" is a comprehensive expression, including regulation of diet, drink, sleep, exercise, clothing, and also mental states. Science has not yet discovered that

standard of health which can resist germs of any disease; apparent health is no guide to it. No means have yet been found out for diagnosing it, and no rules have yet been formulated by which this standard of health can be reached, and always be maintained at that level. Just a beginning has been made in that direction as indicated by the terms "Opsonins" and "opsonic Index"; and it will take many long years, perhaps a century, before this endeavour will meet with crowning success. It is the experience of all, that infectious diseases are no respecter of persons. None can gain say the truth of the statement that the poor who are uncleanly and live in dungeons, and the rich that command free air, cleanliness and all comforts have suffered alike when brought under the influence of virulent infectious diseases. The undecided state of knowledge as to the standard of health required to resist the disease germ and the obvious difficulty in observing those laws for maintaining it in every case, preclude the possibility of the hope of bringing every individual to the required standard of health. Assuming against all possibilities that the state would undertake to supply nourishing food, good clothing, and well ventilated houses to every poor family at state expense, who can guarantee the observance by the people, of other laws such as baths, exercise, sleep and so forth? Above all who can vouch for the sincere endeavour of the people to control their temper and passions which play no mean part in the production of disease, considering the influence of mind on body? Miss Loot will therefore understand that her argument "that free air, cleanliness and observation of Nature's Laws generally would suffice" cannot stand. Surer methods of protection than mere free air and cleanliness have, therefore, to be looked for methods which will prove efficacious in spite of people's best efforts to invite disease by neglecting laws of health. And so far as the experience of many countries proves beyond all doubt, vaccination is the only effective means of protection yet discovered against smallpox.

The utmost that can be said against vaccination is that some unhappy results have attended it in a few cases. No one denies them, and these have been exaggerated beyond all proportion, and have given a handle to the enemies of vaccination to work against it. These evil results are not due to any pernicious property inherent in the lymph; but they are due to accidental causes, as contamination of the lymph in preparation and storage, insufficient care in having the instruments of the operation scrupulously clean, ill-health of the child at the time of vaccination, and so forth. These are all preventable causes. What has to be done then is not to cry down the remedy that has saved millions of lives for generations but to find out and eliminate the evil element in the lymph, that causes mischief.

A serious charge is brought against the authorities that many cases of death from the effects of vaccination have been suppressed. And as an instance, is quoted the case of a child at Wavertree, near Liverpool (England) said to have died from the effects of "generalised vaccina"; and it is alleged that in this case "at the inquest it was stated that the lymph was too active, and yet the jury's verdict was 'Death from national causes'. Therefore this is believed "to prove that many cases occur which are really due to vaccination but are put down to some other cause". With all the craftiness of a lawyer, an attempt is made here to show that the figures published by the Registrar General are not reliable; hence a suspicion is created as to the accuracy of the numbers. Though this may do very well in a Court of Law such an argument has no value from a scientific point of view. To presume from one case that many have occurred is not scientific, though it may lead to a suspicion and incite the scientist to investigate further to find out the truth. As to the case quoted of Wavertree child, unless the full details are published no opinion can be expressed; but it is reasonable to presume that the jury might have had sufficient grounds for pronouncing that verdict. If the secretary would take a little more trouble to get at truth by enquiring with the Registrar General or other authorities concerned in the matter, a satisfactory explanation could be obtained. But to impute motives and try to cast an undeserved slur on the reputation of honest workers is not a praiseworthy policy.

Miss Loot concludes her article with a mixture of praises and invectives levelled at Doctors. She has no hesitation in bearing testimony to the "doctors doing their work nobly and unselfishly"; and still she has a quarrel with them because she believes that "they know vaccination does not protect from smallpox—they have themselves come in contact with deaths from vaccinated small pox, and have seen injuries from vaccination—and yet still mislead the public with cooked figures and untrue statements". "Cooked figures and untrue statements are inconsistent with 'noble and unselfish work'". It is much to be regretted that Miss Loot had no scruples at all to step beyond the limits of decorum in changing the noble and unselfish Doctors, in undisguised language, with roguery and dishonesty. For what reason will the doctors stoop to such base acts? Vaccination is not a concern that brings grist to the mill of any doctor. Why not reveal the names of such dishonest rogues and hold them up to public gaze as examples of unprincipled men in the cloak of saints? No doctor will say that vaccination has no protective power against smallpox though he may admit that some harm has been done in carelessly performed vaccine oper-

ations. If the evil results were the effect of pure lymph, such cases could not have been a few in the million but by hundreds. It is not that doctors go blindly on refusing to investigate; but the anti vaccinationists want to make much of insignificant things. They are perverse and would not see things in their proper light. They are like the Pharisees and the scribes of the 1st century; "seeing they see not; hearing they hear not, neither do they understand". Their comments on vaccination are the outcome of the warped judgment. In listening to them we shall do well to bear in mind the warning of Lord Jesus Christ to his disciples against the Pharisees, Saying, Let them alone; they be blind leaders of the blind. And if blind lead the blind, both shall fall into the ditch."

"VACCINIA."

BOOK REVIEW.

The art of Life by DR. J.L. CHANDRA L. M. & S. (cal) published at 5 Gopee Kristo Paul's Lane, Beadon Square, P. O., Calcutta, pp ii, 240. Price Rs. 2.

The author propagates the theory that cell salts are the essential ingredients of the body and their derangement produces diseases. The one feature of the book is that it contains the practical experience of the author. The book is a Synopsis of the latest views on Physiology, biology and bacteriology given in simple and popular language. We recommend book to the educated public and medical practitioners for whom it is intended.

Essays on Laboratory diagnosis for the General Practitioner: By HARRY, R. HARROWER, M. D., Published by the New Medicine publishing Co., Chicago.

The author has republished all the papers he contributed to different Medical Journals in America, in the form of a book. The writer lays great stress, in the need for clinical laboratory work in Physician's consulting room and shows how that work could be simplified if the author's directions are followed. Considerable stress has been laid by the author upon the Urinary acidity as a point of importance in diagnosis. We recommend this little book to those for whom it has been prepared.

DRUG REVIEW.

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Original Articles.

* SYPHILIS.

Para-Syphilitic Conditions.

By

J. BERNARD DAWSON M.D., (LOND.) F.R.C.S. (ENG.)

(Continued from Page 508, Vol. VIII, The Antiseptic.)



HERE are numerous pathological conditions which are regarded as the consequence of syphilitic infection, but which do not resemble the ordinary tertiary manifestations of the disease. The essential points of difference being that these para-conditions do not react to the usual anti-syphilitic remedies, and moreover, what is a point of great interest, the *Treponema Pallida* has not been found in these lesions. Of this nature are the various affections of the nervous system which occur in patients who have been the subjects of syphilis: *e.g.*, general paralysis of the insane occurs so constantly in conjunction with a history of syphilis, that it is impossible to draw any other conclusion than that they are related as cause and effect.

Taking these conditions in detail, we find that the following disorders are associated with a syphilitic infection:—

Syphilis produces its effects upon the central nervous in two ways:

1. By the causation of an Endarteritis Obliterans which leads to thrombosis, or by a proliferation of the adventitia of the blood-vessels giving rise to gummata.

2. By the influence, (probably a toxic one), which it exerts upon the production of chronic degenerative changes in the nervous tissues.

• Specially contributed to *The Antiseptic*.

The first of these are of the nature of ordinary tertiary phenomena which are amenable to anti-specific treatment.

These appear at any time but most commonly within a few years of the primary infection. They are fairly common and take such forms as:

Gummata.

Thrombosis

Meningo-myelitis and Meningo-encephalitis.

Paralysis of cranial nerves due to localised meningitis.

The degenerative group of disorders appear late after infection, from the fifth to the twentieth year; tabes dorsalis and certain forms of spastic paraplegia are examples of this group.

Since this article is confined to the para-syphilitic group, no further mention will be made of the tertiary manifestations.

General Paralysis of the Insane.

General paralysis or paretic dementia is a degenerative disease of the central nervous system characterised by progressive mental and motor symptoms.

Statistical evidence tends more and more to prove the definite causal relationship of syphilis. Thus:—

Figures show that 86% of cases have a history of acquired syphilis, so that bearing in mind the probable similar relationship of congenital syphilis, and also the impossibility of tracing the record of all cases, it is fair to assume, (as Savage does), that all cases, have a syphilitic history. In all probability, however, the syphilitic toxine needs an excitant before it exerts its destructive action. Of these the following are most important:—

Mental anxiety.

Sexual excess.

Trauma including sunstroke.

Chemical poisons such as alcohol or lead.

Tabes Dorsalis or Locomotor Ataxia, though classed among the para-syphilitic lesions, does not show so close a connection with syphilis as G.P.I. Nevertheless figures certainly tend to prove that about 75% of cases have a history of syphilis. As in the former case, explanation of this is that the infection produces a toxin that has a special affinity for nerve tissue, but it seems likely that some exciting cause is needed to initiate the destructive properties of this toxin. Thus the onset of tabes dorsalis is often preceded by exposure to cold, sexual excess, or injury.

Spastic Paraplegia.—The possibility of a degenerative change confined strictly to one column of nerve fibres has been much questioned; nevertheless cases do arise in which there seems to be a condition of spastic paraplegia uncomplicated by either sensory or sphincteric troubles.

Such cases usually show a definite history of syphilis, and in any case this may be assumed. This condition is rare but a true example of the parasyphilitic lesion.

Ataxic Paraplegia and other forms of combined system degenerations.

This group of degenerative lesions has undoubtedly an association with syphilis, and must be classed among the Para-diseases.

Whilst the aetiology of these degenerations is fairly definite, the pathology is very obscure and difficult, but some attempt must now be made to arrange the theories, which now are advanced, in some kind of order.

Degeneration of the Neurone.

The neurone consists of the nerve cell and its processes; viz:—

1. The axon which is the principal process and which conducts nervous impulses from and to the cell.
2. The dendron which is employed in linking up the nerve cell with other associated nerve cells.

The dendron is short and ends in a synapse or anastomosis with the dendron of another cell; whilst the axon is much longer and forms one of the nerve fibres which build up the conducting columns of the spinal cord.

The axon is dependant upon the nerve cell for its life so that, even if its blood supply remains intact, it perishes if it is severed from its parent cell.

In degenerative lesions of the nervous system the whole neuron suffers alike and simultaneously, the destructive changes occurring at the same time in cell, axon, and neuron.

When owing to some morbid condition, degeneration of a neuron sets in, the following changes are noticed:—

1. *In the cell.* The nucleus swells and loses its central position on the cell. The granules of Nissl become swollen and disappear, after undergoing fatty degeneration. The cell processes break off and the cell eventually becomes shrunken and sclerotic.
2. *In the cell processes.* The myeline sheath swells up, undergoes fatty changes and breaks into fragments. The axis cylinder also

swells in an irregular way and breaks up. The debris thus produced is absorbed, so that eventually nothing remains but a fibrous cord.

The influences at work to produce these changes are probably numerous, but syphilis undoubtedly plays a most important part.

The way in which this disease works is probably as follows :—

Either :—1. By the characteristic arterial changes, which diminish the lumen of the arterioles and thus cut off the blood supply to the part. In this way a process of atrophy is initiated and maintained.

2. By the influence of toxin which is the product of the syphilis. This theory is difficult to understand, for if the organism is still present in the body, it is reasonable to suppose that the lesions would yield to anti-syphilitic treatment. On the other hand if the toxin is a residual of the primary infection, it is difficult to understand why it has escaped excretion in the time which elapses between the primary infection and the appearance of the para-syphilitic lesions.

It is maintained that this toxin has a special affinity for nerve structures so that its union with them is so strong that anti-specific treatment is of no avail.

3. Trauma, mental strain and other factors undoubtedly act as excitants which start and precipitate the onset of these conditions.

In all probability the true aetiology is to be found in a conjunction of these factors. The toxin produces degeneration in the nerve fibre already damaged by trauma or other extraneous circumstance. This process is aided and accelerated by the diminished blood supply caused by the endarteritis of syphilitic origin.

The treatment of para-syphilitic conditions.

Unfortunately this is of very little service. The failure of anti-syphilitic remedies is disappointing, but should nevertheless be tried. Mercurials must be given to destroy any existing treponemata that may be active, whilst Potassium Iodide must be exhibited in large and increasing doses to check the growth of, and remove the fibrous tissue formation. The general surroundings of the patient must be studied; he must be removed from all worrying circumstances, whether family or financial.

He must be placed under the best possible circumstances for the welfare of his general health, and allowed to live a very simple and open-air life. His diet must be nourishing but plain, and tobacco and stimulants interdicted.

The hope of a cure is nil, but the disease may be arrested or at any rate delayed.

Much interest was aroused by the introduction of Thio-si-amine—a compound stated to have a remarkable absorbent action upon fibrous tissue; this has proved disappointing like all other treatment.

In locomotor ataxia some measure of success has attended efforts to re-educate the damaged motor-sense, so that the patient has regained to a certain extent his power of co-ordinate movement.

The para-syphilitic lesions are extremely interesting, difficult of prognosis, disappointing to treat, and extremely trying to the patient and his friends.

Great tact is needed in dealing with such patients, for it is important their spirits should be maintained and that they should be encouraged to maintain their interest in life as long as possible.

• MENTAL DEFICIENCY IN INFANCY AND CHILDHOOD.

BY

H. E. JONES, M. R. C. S. (ENG), L. R. C. P. (LOND).

Other Types of Mental Deficiency.

1. *Microcephalic*.—This in its extreme form is characteristic of a low type of idiocy, though there are a series of gradations rising through idiocy and imbecility to feeble-mindedness frequently associated with this condition. Microcephaly, however, does not solely depend on the small size of the cranium, but more particularly on the relative disproportion between the size of the head and the size of the face. The vault of the cranium is arrested in its growth, whilst the other parts of the skull continue to enlarge, producing the characteristic form, *viz.*, a narrow rapidly receding forehead, a somewhat pointed vertex and often a flat occiput. Some observers class all heads with the greatest circumference 2 inches or more below the average as "Microcephalic" and mentally "Deficient", but this is not the case, for one sees many children whose heads are quite this amount below normal but in whom the size of the head is not out of proportion to that of the face and in whom the mental condition is perfectly normal.

Merely to classify an imbecile as "Microcephalic" simply describes the appearance of the patient, and tells us nothing regarding the etiology, for there are many causes which may lead to arrest of growth of the brain, and consequently to microcephaly, in some of which the arrest

• Specially contributed to *The Antiseptic*.

of development affects the whole of the brain equally, whilst in others only certain parts are affected and underdeveloped.

In most cases the fontanelles close early and hence it has been suggested that the real cause of the condition is mechanical hindrance to the brain development owing to early closure of the cranial sutures. The real cause, however, is far more probably, interuterine in origin, either some obstruction to the blood supply whereby the nutrition of the brain suffers, or the influence of some toxic substances (possibly syphilitic) carried by the maternal blood to the developing embryo.

2. *Hydrocephalic.*—

Some of these cases are congenital in origin and naturally in these the mental condition also dates from birth. In others, the hydrocephalus has been acquired as the result of some form of meningitis, and in these the child, perhaps previously normal mentally, becomes defective owing to the pressure of the fluid on the brain substance.

Many degrees of mental enfeeblement are met with in this type, and it is often surprising how much intelligence one sometimes sees with a very watery brain. In other cases optic neuritis and signs of pressure foretell an early death. Regarding education, it is only those cases in which the active symptoms have passed off that are capable of training.

3. *Hypertrophic.*—

In these the head is also enlarged, but there is no excess of fluid, simply hypertrophy of the brain substance affecting the interstitial tissue only. The hypertrophic head is seldom as large as the head of hydrocephalus: the shape is square rather than round, there is no bulging along the sutures or in the region of the fontanelles and the fulness is more marked in the temporal regions than in the superciliary regions. There is marked muscular weakness and headache, whilst the patients are very prone to fits of an epileptiform character.

4. *Paralytic mental deficiency.*—

The mental deficiency accompanying this condition may be congenital or acquired. In those cases of infantile hemiplegia, usually post-natal in origin, the mental defect must be considered acquired and though varying in degree is seldom, if ever, so intense as to amount to idiocy. In the cases of spastic diplegia and paraplegia the mental state must be considered developmental and is usually very considerable and often resulting in imbecility or idiocy. In all these cases one is apt to arrive at an exaggerated estimate of the mental defect, because

owing to paralysis of muscles, they have a difficulty in getting about and living an active life like other children, and accordingly their education suffers, and to this, no doubt, part of their dulness is to be attributed.

5. *Eclamptic and epileptic idiocy.*—

The former of these includes those cases in which a fit has been the starting point of the mental defect. The child lives for the first few years of its life quite normally and mental development goes on in the ordinary manner. Then quite suddenly the child has a severe convulsion which appears to damage the brain, for from this time the mental development gradually suffers, though the child has no repetition of the fit. In the epileptic group the cases may commence with a fit, but the characteristic feature is that the fits recur.

The child goes on having fits, and it is in consequence of these fits that the mental state suffers. As a general rule, frequency of fits in any child under the age of seven years is practically always followed by some degree of mental deficiency.

6. *Inflammatory idiocy.*—

This depends on encephalitis or meningo-encephalitis, and is a result of some infection of the cortex. In those cases in which the infection affects the motor areas some degree of infantile hemiplegia will be present, and probably these are identical with the cases of hemiplegia accompanied by mental deficiency. If the motor cortex alone be affected hemiplegia alone will result, and on the other hand, if the encephalitis be confined to other parts of the cortex mental deficiency alone will be the resulting feature. This is the form occasionally seen following one of the acute specific fevers in children.

7. *Traumatic idiocy.*—

This is rare as a cause of mental deficiency in children, but there are authenticated cases on record in which a blow on the head has been directly followed by a mental defect.

8. *Syphilitic mental deficiency.*—

Mental deficiency as the result of congenital syphilis is generally considered identical with juvenile cases of general Paralysis. In the latter half of childhood the patient becomes dull, suffers with headache, has epileptiform attacks and seems to gradually lose its memory. A little later speech becomes slow and thick, the knee-jerks are found to be increased, the pupils unequal and the gait unsteady owing to the increasing weakness of the legs. Rigidity of the limbs appears, and the

child becoming more and more deficient and weak, until it is unable to even sit up in bed, finally dies four or five years after the onset of the disease. After death a meningo-encephalitis is found together with thickening of the pia mater and adhesions of the dura mater. In addition there is often sclerosis and atrophy of the convolutions.

STILL describes a similar change pathologically with similar clinical symptoms having sometimes an acute course, but this is rather rare.

9. *Idiocy by Deprivation.*—

These are the cases which become mentally deficient owing to a blockage of the paths of knowledge, especially the special senses, *e. g.*, the eye, the ear, nose, etc.

The most common causes are errors of refraction, especially hypermetropia and astigmatism, middle ear disease, and perhaps the greatest of all, those cases due to the presence of adenoids and their non-removal. With the advent of a routine medical inspection of all our school children, these cases will become, as time goes on, more and more rare. Many of them are only dull and backward, and it is often surprising how rapidly a child will acquire knowledge after the defects have been satisfactorily treated.

10. *Primary Amaurotic Idiocy.*—

These rare cases were first of all described by Mr. WARREN TAY in 1871. They tend to occur in families, several members of the same family being likely to suffer, and all the cases up to the present have been of Hebrew parentage. The children are usually normal at birth and for sometime afterwards: then loss of vision sets in with characteristic changes in the fundus of the eye, together with marked paralysis leading to death about the end of the second year of life. The changes in the fundus are as follows: the macula is represented by a dark cherry-red spot which is surrounded on all sides by a large area, about twice the size of the disc or more, very pale with soft woolly looking edges and its longest diameter horizontal. The condition of the fundus remains the same throughout the illness, except that the disc becomes more and more pale and finally completely atrophic. Usually there are no signs of syphilis present either in the parents or the children. The history of the cases suggests that development becomes arrested by some influence which determines rapid and complete decay, especially in the pyramidal system, and the morbid anatomy bears out this view.

11. *Unclassifiable Cases.*—

These are those cases which one cannot refer to any of the aforementioned groups, and really form the majority of the cases met with.

They are characterized by mental deficiency, associated, perhaps, with some "physical stigmata" I have described in a previous paper.

Taking these into account, together with the speech, general appearance and behaviour of the patient, they are usually fairly easily diagnosed.

WORD-DEAFNESS AND WORD-BLINDNESS.

Word-deafness.—

This type of child is usually superior in intellect to the average mentally defective child, though not up to the child whose only defect is word-blindness. He is generally able to draw fairly well and to write from a copy and use his fingers. He is not really deaf, for he will often respond to sounds by movements of the head or body. The vision is normal. He can reproduce many words without understanding them, and by making these children keep their eyes on the speaker's lips some of them can be taught lip-reading. The only chance of training these children is, in fact, by teaching them language by lip-reading or some method other than the storage of memories of words heard.

Word-blindness.—

This child is fairly intelligent, generally quite good at copying, drawing and manual work, and has fair power of reasoning and calculation. Vision is normal, but the child is quite unable to read words of one syllable, and all efforts to teach him result in absolute failure. Though he cannot recognise words, if a word be spelt out to him, he is often able to reply with the correct one. The idea in training is to develop a kinaesthetic memory of word-meanings by making the pupil move his lip as he reads.

Our Contemporaries.

MEDICINE.

Some Results of Vaccine Therapy.

By

FRANK TIDSWELL, M. B., CH. M. (SYP.), D. P. H. (CAMP).

It has been the practice of the Bureau of Microbiology ever since its inception to afford to you any help of which it was capable in the matter of making and supplying vaccines. If, in return, it has asked for some report of their use, this was with a view of making ultimately the results available for the information of all our *confreres*. One cannot

read in our journals the reports concerning vaccines without being impressed in the first place with the amount of attention which is being devoted to this subject, and in the second place with the 'dramatically successful results which are claimed for this line of treatment. At the same time, one may note, albeit occasionally, dissentient reports, and so one may infer that there are aspects of the matter which are not yet quite beyond question. This being the situation, it seems advisable that we should, as soon as possible, seek to set our views in order by consideration of data which we ourselves have acquired, and which we can discuss with the assistance of those who have had the cases under their actual observation. Hence, it has seemed to me that the time has arrived when I should submit to you at least a first instalment of that information which I have been endeavouring to collect for our common benefit; and so I ask your attention to a statement of the results as reported, and would invite your friendly criticism of such comments as I feel able to make upon them.

The cases which compose the series I have to report to you were all treated with autogenous vaccines prepared at the Bureau of Microbiology, but the diagnosis of the maladies, the administration of the vaccine, and the opinion as regards the issue, rest entirely with the medical man in charge of the case. The series thus represent a collective investigation of the subject, as yet, however, one of modest dimensions.

1. We may commence our review with the consideration of skin lesions. Vaccines are advised for any of these which have a suppurative character or which are primarily or secondarily of microbic causation. Thus not only acne, furunculosis, carbuncles, sycosis, pustular dermatitis, and the like, come within the scope of the vaccinators, but also erysipelas and other forms of cellulitis; and it is specifically claimed that good results have been obtained in erythema multiforme, dermatitis herpetiformis, and pityriasis rosea.

In our series of cases there were 21 cases of acne, 17 of which are reported as having been cured, and four improved, being still under treatment when report was made. One may conclude that the treatment of acne has been uniformly successful, and our results in this respect have been in accord with those elsewhere. Our series contains, further, the record of four cases of pustular dermatitis for which staphylococcal or streptococcal vaccines were used, but always the report has been that the patient has not been benefited by the treatment. There are six cases of furunculosis, every one yielding staphylococcus aureus. Cures are claimed for five of them; in the other case the report is indefinite.

There is a single case of recurring carbuncle of the neck, in which a stock (purchased) mixed vaccine failed to afford more than temporary amelioration, whilst an autogenous vaccine gave prompt and permanent relief. The remaining case of this group is one of multiple sores on the terminal phalanges of the fingers—apparently a condition like whitlow—which is said to have resisted ordinary treatment, but to have rapidly healed up after inoculation of a vaccine prepared from a streptococcus isolated from the sores.

2. The next group of cases to which I draw your attention comprises those in which the lesion is deeper, such as chronic abscess and discharging sinuses. There are many records of the satisfactory healing up under vaccine treatment of these conditions, where other means had failed. Success in such cases would be most welcome, as there are many of them which are difficult to get at with antiseptics. Our series contains six of these cases in which, unfortunately, we have had little success; three of them were treated with staphylococcus aureus vaccine, and one each with the vaccines of staphylococcus albus, streptococcus, and a diphtheroid bacillus. Cure followed only in the case of the albus vaccine—the other five are reported to have been without satisfactory results.

3. Inflammatory conditions of the genitourinary tract—pyelitis; cystitis, urethritis, epididymitis and so on—have been reported as very amenable to vaccine treatment. It is said that the colon bacillus is responsible for about 50 per cent of such cases. Of the 13 cases of pyelitis which occurred in our series, the colon bacillus appeared to be responsible for 12. The vaccines prepared from the strains isolated were successful in six and failed in six. In the remaining case a staphylococcus was isolated and used for the vaccine, but without good result. It may be suspected that here the blame was placed upon the wrong microbe. In two cases of cystitis, one treated with colon bacillus vaccine was not benefited, the other treated with streptococcal vaccine was cured.

Several writers advocate the vaccine treatment of gonorrhœa, generally advising intervention immediately after the acute stage. We have records of only two cases, one successful, the other not, after the use of gonococcal vaccines.

Three cases of chronic urethritis all yielded staphylococcus albus. The use of the vaccines made therefrom are reported to have been followed by improvement, but for one reason or another the treatment was abandoned before a definite issue was reached. SCHINDLER reports good results in affections of the adnexa—epididymitis, etc. Success is

also stated to have attended the vaccine treatment of, gonorrhoeal arthritis. A very important application of the method has been made in the treatment of vulvo-vaginitis in children, reports being to the effect that vaccines have proved more effective and more rapid in action than the usual irrigation, besides avoiding the trouble and disturbance incidental to the latter operation. These statements suggest that the method is worth a trial in these cases.

4. Very much interest attaches to the application of vaccine therapy to inflammations of the respiratory tract. In these conditions the micro-organisms which are most commonly present, and are held to be responsible for them, are *Bacillus Friedlander*, *micrococcus catarrhalis*, *bacillus septus*, *bacillus influenzae*, the pneumococcus and the pyogenic staphylococci and streptococci. Apparently any one of these may be responsible for inflammation in any region of the air passages. Most usually *Friedlander* affects the nose, *catarrhalis* the intrapulmonary air passages, and the pneumococcus the lung tissue, but there is almost invariably mixed infection, the lesions caused by the usual or primary microbe (*Friedlander* or *catarrhalis*, or pneumococci) being secondarily invaded by staphylococci or streptococci, or by some rarer microbe such as *micrococcus paratetragenus*. Because of these mixtures and for other reasons which will be referred to later, these cases are apt to prove disappointing. Nevertheless, judging by other people's experience, we seem to have been exceptionally unfortunate in having had not a single success amongst seven cases treated.

The journals contain several accounts of patients whose recurrent colds or asthma were abolished by vaccine treatment, but of all its achievements as regards respiratory diseases there is none of such potential importance as its asserted value in pneumonia. Sir James Barr, in his recent address at the Medical Section of the Canadian Medical Association, refers to pneumonia vaccine as a most valuable remedy in the prevention and treatment of this disease, and especially instances postural pneumonia, and the septic pneumonia following mouth operations as conditions which may be appropriately handled with vaccines. Craig reports its successful use under the most adverse circumstances. He had six consecutive recoveries from acute pneumonia in old alcoholic seamen, all except one having arteriosclerosis and nephritis—cases amongst which the previous fatality had been 66.6 per cent. A similar experience is also recorded by Leary, who treated 34 alcoholic or extreme cases with recovery of all but six, and of 49 ordinary cases with recovery of all but two, the gross fatality being 9.7 per cent. The usual fatality of pneumonia, according to the textbooks, is about 14 per cent.

The report states there was generally a rapid relief and sometimes crisis in three days.

These reports seem sufficiently encouraging to induce a trial of the method in these serious cases, and so, for the guidance of anyone disposed that way, I add the following details of the process. There are probably many strains of pneumococci, and hence an autogenous vaccine would seem to be demanded. But time presses in such cases, and hence stock vaccines are used at once and followed up by autogenous vaccines as soon as possible. The preferential stock vaccine is some remaining over from a previous case, and about which one knows something, or a well-known laboratory stock vaccine, for pneumococcal vaccines are said to vary much in potency. In this respect the Bureau would be prepared to help to any possible extent. The vaccine has been given in small doses (10 to 20 millions), repeated in 24 and 48 hours if necessary. Leary gives still smaller doses every four hours. There is said to be no negative phase.

5. Inflammatory conditions of the intestinal tract—dysentery, mucous colitis, etc.—have been treated with varying success, but we have no record of any such case in our series.

6. Accounts of the successful treatment of suppurative conditions of the eye or not infrequent in the journals, and two such are recorded in our series. One was a case of granular lids which had become acutely inflamed, and in which there was very copious discharge of purulent secretion. For two months the patient had been treated in the ordinary way without relief, and it was decided to try the effect of a vaccine. *Staphylococcus albus* was isolated from the pus forwarded, and a vaccine of this microbe prepared. There followed a somewhat dramatic alleviation of the condition, the vaccine being said to have affected more improvement in three weeks than had taken place by local treatment alone in three months. In the other eye case there was stated to be recurring pustules on the eyelids. After the use of a vaccine prepared with a diphtheroid bacillus isolated the condition cleared up, but the reporter was not satisfied that the result was due to the vaccine.

7. We have prepared three vaccines for actinomycosis, all of which have been used without success, and also emulsions of tubercle bacilli; but as regards these last I say nothing here, since the biotherapeutics of tuberculosis is too bulky a subject for any such brief notice as it could receive in this place.

8. We may therefore turn to the use of vaccines in septicæmic conditions. Notwithstanding that in such conditions there is presuma-

bly an abundance of toxin in the system, yet it is maintained by WRIGHT (and in this he is supported by others) that such cases may be appropriately treated with vaccines. WRIGHT'S opinion—that the vaccine on antigen produces antibody at the site of injection, and that it is antibody and not antigen or toxin which thus enters the circulation—affords his justification for the practice. There are numerous reports of successful issues in the journals. Our series contains the record of 12 cases of septicæmia in which the patients were treated with vaccines prepared from micro-organisms isolated from their bloods. In nine of these cases the causal microbe was a streptococcus, and in six of these it is reported that the treatment was successful, in two unsuccessful, and in one indefinite. In two cases there were mixed infections—streptococcus and staphylococcus aureus, and staphylococcus albus and a micrococcus (of undetermined species) respectively; in both the treatment was unsuccessful. In the remaining case the microbe isolated was *Bacillus Pyocyaneus*, and the vaccine is said to have acted splendidly. Our series also contains the record of the vaccine treatment of six cases of endocarditis. Three of these were due to staphylococci, one to the streptococcus pyogenes, one to a mixture of staphylococci and streptococci, and one to a coliform bacillus. The treatment is said to have been successful in the case of mixed infection; in the other five it was unsuccessful.

In connection with this aspect of the question it may be mentioned that recently there has been recorded a remarkably successful use of vaccines in a case of acute lymphangitis due to staphylococci.

9. I may be permitted to refer here to a disease upon which we have as yet no data, but whose vaccine treatment is a matter of very great moment to us, viz., typhoid fever. The value of prophylactic inoculation against typhoid fever is vouched for by extensive statistical data collected from the British, German and American armies; and I gather this treatment is now being applied to missionaries and other persons whose vocation exposes them to infection. The matter may be commended to the notice of physicians and nurses. But apart from this preventive application, vaccines are now being employed in the treatment of typhoid fever. This method was apparently originated by Sir W. LEISHMAN, and the first series of cases were reported by him and by Captain SMALLMAN, I. M. S. There have been many subsequent reports on the same subject. The general tenor of these reports is that vaccine therapy may be successfully applied to typhoid, on which it has a prompt and beneficial effect. HOLLIS records 27 cases and no deaths; SMALLMAN 36 cases with 2 deaths. There is said to be ame-

lioration of the general course and less liability to relapse, and no negative phase with the usual dosage of 10 to 50 millions. I have only to add that typhoid vaccine will be made available to any of you who may wish to give the treatment a trial.

10. Still one more disease, of which we have no experience, deserves mention. There are quite a number of good reports upon the use of vaccine treatment of otitis media, both acute and chronic. One paper on the subject contains a record of 39 cases in which ordinary treatment had little effect, whilst vaccines are said to have cured 28 of them—the test of cure being cessation of discharge and no recurrence for 'some time.

From the foregoing account it will be seen that whilst we may feel gratified in having secured a certain measure of success, we must humbly acknowledge that we have had failures in cases in which the experience of others would have led us to expect better fortune. It is desirable, therefore, that we should give brief consideration to the possible cause of such failures, or, as I have preferred to do, give a little time to some general principles which may have influenced our results.

With regard to the bacteriological faults, the first likely source of error is that the material submitted to the bacteriologist may not be representative: the actual specimen of discharge or of blood may not contain pathogenic microbes at all, or those which it does contain are not the real cause of the condition. The safeguard against this is to submit at least two specimens taken at different times. In this connection it may be pointed out that in cases of mixed infection the microbe responsible may change during the course of treatment; an appropriate vaccine may eliminate one species, or repress it, and so permit an altogether different species to become predominant, thus calling for a different vaccine. It is desirable to keep a check over this by having specimens examined at intervals.

The next source of error is that although the specimen does contain it, yet the causal microbe fails to grow, or fails to hold its own against other microbes present, and is inconspicuous in the resulting growth, and so is not isolated. The bacteriologist may be thus deceived into supplying the wrong vaccine. It is desirable to remember that this individual is only human and therefore liable to error, and in case the vaccine supplied is not effective the clinician should suggest that search be made for the likely presence of some other microbe.

Of kindred character is the error due to misjudgment as to which microbe of several isolated is actually responsible. Here the bacteriologist's judgment and experience has frequently to be the determining

factor, and consequently it is desirable to afford him all the assistance which an idea of the nature of the case can supply. It is common with us, and I have no doubt it is the same elsewhere, that a specimen is sent with the simple request that it should be examined for micro-organisms and a vaccine prepared. This is a very indefinite order, and quite possibly such reservation will recoil upon the sender. The clinician, without breach of professional secrecy, can confide to his bacteriologist sufficient information to enable the latter to exercise what powers he possesses of appraising the respective influences of several microbes which may be isolated. A consultation may solve a difficulty. The desirability of this confidence is self-evident, but very often it is not given. In some cases the particular microbe may be incriminated by means of the opsonic index, but, apart from being a very tedious business, the reading of the index is apt to be misleading, unless frequently performed on the same patient, and in some cases cannot be done at all, either because the normal serum has practically no phagocytic action on the microbe, as in the case of the pneumococcus, or the patient's serum agglutinates the microbe, as in typhoid fever. It is possible in mixed cases to resort to a mixed vaccine, but this is a practice which robs vaccine treatment of that therapeutic precision which is its greatest virtue. Simply to fire in a mixture of vaccines in the hope that some one of them will hit the mark may serve our purpose when we can do no better, but it is an ignorant proceeding which is best avoided if possible. Its scientific substitute is to use a vaccine of each microbe separately and serially until the right one is found.

The remaining sin of the bacteriologist is that the vaccine be wrongly prepared. This is purely a matter of technique, and a fault in this direction should never occur.

Turning now to the faults of the vaccinator, I would ask you to bear kindly with me if I say that amongst these is a quite common failure to grasp the principles of the method. It is all important to have always in mind a clear idea of what we are attempting to do. Wright's dictum, you will remember, is that "the fundamental principle of vaccine therapy is to exploit in the interests of the infected tissues the unexercised immunising capacities of the uninfected tissues." We should perceive clearly the difference between a serum and a vaccine. With a serum we give ready-formed antibodies, and make no demand whatsoever on the patient's vigour; the more we give in reason the better. It is otherwise with vaccines. Here we merely give something (a vaccine or antigen) by which we hope to call forth the production of antibodies by the patient himself—to induce the uninfected tissues to exercise whatever

power they possess of elaborating antibodies. The essence of the whole matter is to obtain a response on the part of the patient, and we must not ask for too much at once.

The first point of note in this connection is that vaccine treatment can only be expected to succeed if applied whilst the patient is still capable of responding; clearly it must not be postponed until all his vigour is dissipated. The early resort to vaccines is the more to be urged since they are to be used in conjunction with, and not in substitution for, other remedial measures.

The second point for consideration is how best to elicit the response, and in this connection one reads much about the "effective" dose of vaccines. Text-books on the subject set out for each vaccine the amount which the authors consider the appropriate commencing dose, but the perusal of reports show the greatest diversity of practice in this matter. For my own part I suggest the text-book doses are usually too large. The "effective" dose varies with the patient, for no two persons are just equally responsive, but, on the other hand, there is a pretty wide range of susceptibility. Knowing nothing of the possibilities, one has to grope for the right thing, and this may be done most easily and most safely by beginning with small doses. Hence my own practice has been of this kind; for instance, as a first dose, I give 50 millions albus vaccine, instead of 250 prescribed by the text-books, and so with others. The course of treatment may be a little longer under these circumstances, but it is likely to be pleasanter for the patient, in that it avoids any violent reaction.

This matter of reaction, and particularly the so-called negative phase, is apt to be very seriously regarded at first sight. I imagine that it is just this prospect of a reaction which has prevented a more widespread application of the treatment. One pictures, after having vaccinated somebody, being called out in a hurry to find them prostrated or collapsed, with their temperature up to 106°, their friends imploring assistance, while one stands by without in the least knowing what can be done under the circumstances. Now, the fact is quite otherwise. So far as I am aware, and can ascertain, there has never been any calamity from the use of a vaccine. Large doses certainly have caused severe enough cellulitis at the site of inoculation, and more or less depression of the patient, but these ill effects have been transient. Moreover, if such a reaction occur, the method is being misused, the doses are too large. Reaction there must be, of course; but what one requires is a "reaction of immunity," an event which is not necessarily indicated by a visible or symptomatic reaction, but indeed may be negated by that

occurrence. The effect of the first dose affords the guide to the amount to be used for the second. A reaction, if there be one, calls for repetition of the same dose, or a reduced dose according to its degree. If there be no reaction, the succeeding dose may be a larger one—twice or even three times the first. As the case goes on, confidence will be gained and the vaccine pushed, or on the other hand the necessity of caution will become manifest and the dosage kept well restrained. The time for repetition—"spacing"—will be determined upon in the same way; when there is no reaction the vaccination may be repeated in three or four days' time, or after a week, sooner or later, according to the issue. We have already noticed that in the treatment of pneumonia and typhoid fever the succeeding doses have been given at intervals of 24 or 48 hours in the case of the first, and two or three days in the case of the second disease, small doses being used; and the general principle has been enunciated that the more acute the disease the smaller should be the dose, and the more frequently should it be repeated. In septicæmias vaccines have been given at four-hour intervals—never enough to do much damage, but enough to keep stimulating the tissues to whatever response they can give. Under such conditions the patient is already being called upon to make vigorous efforts, and while we try to promote and orientate those efforts it is important we should avoid making an overwhelming demand. I do not see why this advantage of small doses should not be utilised in the cases of other diseases, and it seems to me that this method of proceeding affords much the best opportunity of frequently drilling our patients' cells into that steady production of antibody which it is our object to achieve. Hence, without venturing to contest the opinion of authorities of very much greater experience than I can pretend to, I would suggest to you the possible superiority of gentle and patient use of vaccines. Starting with the small doses, such as I have referred to above, the whole course of the treatment often proceeds without any sign of a "reaction," the patient being unconscious of anything more than occurs at the inoculations and the steady amelioration of the complaint. I believe this to be correct practice.

I have said elsewhere that the institution of vaccine therapy does not call for the suspension of any other appropriate remedial measures. On the other hand, its success may demand accessory treatment. The antibodies called forth by the vaccine circulate in the lymph, and their desired activity at the focus of disease is conditional on the lymph reaching that focus. It is probably for the reason that they are rather out of the range of the lymph that superficial lesions of the skin and body passages are so variably influenced by vaccines. WRIGHT is very insistent

upon the promotion of the access of the lymph by inducing hyperæmia of the lesion, by bandaging, fomenting, and so on. I believe I have more than once got acne to start healing by requiring the patient to bathe the face in hot water so as to keep it red for a while every day. In this connection it will be remembered that WRIGHT advocates the exhibition of citrates to promote lymph circulation, and others the administration of yeasts to encourage the formation of leucocytes and thereby augment the phagocytosis of the opsonised bacteria.

There appear to be few contraindications to vaccine therapy, the only serious one being a case where the patient is being subjected to a material auto-inoculation, whether by his own exertions or by surgical manipulation, or by the activity of some focus of disease. Such a state of affairs must necessarily interfere with the regulation of the treatment, and so must, as far as possible, be avoided by rest and other measures such as are advocated in the case of tuberculosis. Apart from this there is no reason for suspending the patient's activity during the treatment unless such a measure is called for by other circumstances in his condition.

Anaphylaxis is very unusual in vaccine therapy, and from a practical point of view the prospect of it may be neglected.

In submitting this paper I have, I hope, sufficiently traversed our own data to afford you an idea of what we have been doing in the matter of vaccine therapy. I have made some comparison of these data with those reported from elsewhere, and I have made reference to certain conditions—otitis media, pneumonia, typhoid, etc.—upon which we ourselves have no data, but which seem from the accounts of others to offer attractive fields for the trial of vaccines. I would not be understood, however, to have attempted to indicate the bounds of this therapeutic measure. The tenet upon this point is that all infections of which the causal microbes are known and can be cultivated are amenable to vaccine therapy, provided the lesion is accessible to the lymph. I would add that this dictum applies to secondary no less than to primary infections. Even when the disease is not one which can be directly treated with vaccines,—as, for instance, cancer—much comfort may still be derived from the suppression of the secondary microbes which give rise to unpleasant accompaniments. Apart from any question of cure, it is likely that surgeons may find vaccines valuable allies when dealing with suppurating conditions—as in abscesses in the liver or other viscera, or pus in the peritoneal sac, or as a prophylactic measure before operations on inflamed viscera. Their help may turn the scale in favour of the patient. Incidentally it may

we mentioned that a claim has been made that the use of vaccines in cases with granulating wounds lessens or even prevents scarring. Any advantage to be gained in this direction would be exceedingly valuable in the case of burns. But I must not pursue the matter further; I am sure you can see for yourselves that a pretty large field is open to your exploration. I have ventured to make some comments upon practical points which may perhaps be of service, not so much as directions, for I do not presume to have mastered the subject myself, but by way of securing some sort of uniformity in the use of vaccines which will lead us conjointly to better understanding of them. For I hold that it is not a matter about which one can lay down general rules. Patients vary so much that each one must be the subject of individual study on the part of both the bacteriologist and the observer in charge of the case. To best reap the benefits and avoid the pitfalls loyal co-operation is necessary. I would particularly insist that there is nothing mysterious about vaccine therapy; nothing that cannot be clearly understood by any well-educated medical man. If you will but think about it, the matter will appeal to you as being very simple and rigidly scientific; one which can be utilised without injury to our patients, and one with such potentialities for good as to demand its exhibition in the patient's interests.

As a last word I would suggest to you that we should apply the method rationally and give it a chance whilst the patient has the vigour to make the essential response. We should not wait, as is now so often done, till all other methods—and the patient, too—are exhausted, and then condemn vaccine therapy because it is not able to perform miracles.—*The Australasian Medical Gazette.*

On the Presence of Tubercle Bacillus in the Blood of Tubercular Patients.

BY

DR. F. KURASHIGE.

(or in the last Number.)

Now I have tried to examine those persons, who can be looked up as healthy with this method and on the whole I have examined 34 cases among my fellow workers and nurses in the hospital. About these persons I had no reason to believe their being tubercular, but healthy, and I selected only those who are capable of and doing every day's works in the hospital. The results of my examinations were beyond my belief and I obtained 59 % positive results, namely, 20 out of the total 34

Among those positive cases 3 cases developed tubercular pleurisy 5 months after the examination and 2 cases were obliged to rest owing to hæmoptosis. Beside this I have injected the residues obtained by treating the blood of 4 other positive cases subcutaneously into guinea pigs and they all became tubercular. Thus I have proved for a certainty the bacilli found in the blood to be tubercular in at least 4 cases and this result shows that the bacilli treated with undiluted Antiformin are not killed within the time allowed in my method. Then I have obtained the same results with the bloods of 8 rabbits which were made tubercular through intravenous injection of tubercle bacillus 9 months ago and are still alive. All these rabbits' blood proved positive. In one of them I saw many conglomerations of tubercle bacillus and in another I discovered the pulmonary lesions almost healed into fibrous scars.

Lastly I should like to mention that I have taken every precaution to prevent the mixture of other acid bacilli so as to avoid errors in my results. Every instruments and solutions used in my examinations were made as sterile as possible with due precautions and proceedings. All the solutions were examined with my antiformin method and proved to be free from acid bacillus. Further I examined the bloods of two rabbits and one guinea pig with my method and they were all proved to be free from other acid bacilli. I believe I have taken every precaution to prevent the repetition of the criticisms of BREM and FARLAND against ROSENBERGER. According to the above results, although the entrance of tubercle bacillus into the blood are frequent or rather common as reported by LIEBERMEISTER, it is rare to be followed by acute miliary tuberculosis and it is wrong to believe that the entrance of tubercle bacillus into the blood is to be followed by acute miliary tuberculosis as accepted before. Now it is natural to question what is the fate of the bacilli which get into the blood;—are they killed or, if not, what are the substances which prevent the activity of the bacilli? The majority of the authors believe that the quantity of the bacillus, which enters the blood, has a great relation to this question. Commonly only a small number of the bacillus gets into the blood, and they are usually killed without exhibiting any toxic actions. Only in cases where a large number of the bacillus gets into the blood, they exhibit toxic actions and produce acute miliary tuberculosis.

SCHNITTLER is one who has the same opinion and explained the absence of miliary tuberculosis in his 12 positive cases by the fact that 1 c.cm. of the blood of these cases contained only a small number (2—5) of tubercle bacillus and believed that such a small number of the bacillus can be easily exterminated by opsonine or bacterotropine. However,

according to my results the bacilli which get into the blood cannot be said to be in small number, and in one case I observed over a hundred bacilli in one specimen. Moreover more than the half of the 3rd stage patients' blood contained over ten bacilli in one microscopical field, but none of them showed any acute exacerbations. The above mentioned one case showed comparatively a good nutrition, moving about the place, and his complaints gradually diminished, and one year after the blood examination he was able to do some light works. Therefore the number of the bacillus cannot be said to have any relation to acute exacerbations, and there must be some other important causes, such as the exhaustion of bodily strength with consequent diminution of resistance and the degrees of the bacterial activity with accompanying varieties in their toxicity.

As regards the way by which tubercle bacillus gets into the blood, the majority of the authors believe that some tubercular lesion will invade the blood-vessels or lymphatics, and these tubercular nodules will then break down, and let the bacillus into the blood. Further they believe the presence of the bacilli in the blood to be temporary and to occur only in severe cases. My results, however, do not agree with these opinions, and show that the entrance of the bacillus occurs quite in an early stage of the disease, and that even in quite light cases one can discover the bacilli in the blood. They also show that the presence of the bacillus in the blood appears to be not temporary, but permanent. Although I have not had the opportunity of examining the same patient for a long time I should like to make, according to the positive results in all the light cases and in the above mentioned eight rabbits, the above conclusions. I have some doubt as regards the way by which the entrance of the bacilli is affected, and I believe in agreement with BENOHR, LANDOUZY and LÆDERICH, LANDOUZY and AROLOING in that the tuberculosis is a bacillæmie and the local lesions are the pathological changes occurring in *Locus minoris resistentiæ*.

The diagnostical values of the presence of tubercle bacillus in the blood have been proclaimed by LIEBERMEISTER and many others, and I believe its value to be hundred times over what we believed it to be before. Especially since its examination takes only a short time and requires a small labour it must give great convenience in the diagnosis of tuberculosis.

As regards its prognostic value I cannot agree with SCHNITTLER who gave it a great weight, and I think, although the presence of tubercle bacillus is a pathognomonic symptom in the diagnosis of tuberculosis, it cannot tell anything as regards the prognosis; particularly I cannot

agree with SCHNITTLER who looks upon the presence of tubercle bacilli in the blood as a precursor of death.

CONCLUSIONS.

1. The presence of tubercle bacillus in the blood of tubercular patients has been examined by many experimenters and positive results were naturally obtained in general miliary tuberculosis and frequently in other chronic tuberculosis.

2. The percentages of the positive results were 30 to 40 % on an average and ROSENBERGER was the only one who obtained 100 % positive results in 80 cases including 15 early phthisis.

3. I have obtained positive results in all the 155 cases including the patients of early and late stages, and also in 59 % of 34 cases who can be looked upon as healthy.

4. I have also obtained positive results in all the rabbits numbering eight which were made tubercular by the intravenous injection tubercle bacillus 9 months ago.

5. My results agree with those of ROSENBERGER and differs greatly from those of other authors not only in percentage but in the number of tubercle bacillus found in each specimen.

6. My method is a modification of SCHNITTLER-STAUHL'S method and undiluted antiformin was used. All the instruments and solutions employed were sterilised under due precautions and proceedings, and proved to be absolutely free from acid bacilli by exact examinations.

7. Further I injected the residue of blood treated by antiformin into guinea pigs and produced tubercular lesions. This proves the bacilli seen in the blood to be tubercular and the antiformin to be not destructive to the life of the bacilli in the time in which it was used.

8. The entrance of tubercle bacilli into the blood is not always followed by acute miliary tuberculosis. This fact cannot be explained only by the small number of bacillus, but is probably due to many other important causes.

9. The presence of tubercle bacillus in the blood occurs quite early in the disease contrary to the previous views, and appears to be not temporary. Consequently I doubt if the tuberculosis is not primarily a bacillæmie.

10. The examination of the tubercle bacillus in the blood has a very great diagnostic value and its simplicity increases its value.

11. The prognostic value is on the contrary small, and it is a great mistake to think the presence of the bac. in the blood as a precursor of death.

Finally I express my great thanks to PROF. SARA for his kind guidance, and to DR. ARIMA and fellow workers for their kind assistances.—*The Sei-I-Kwai Medical Journal*.

The Etiology and Treatment of certain forms of Periodical Headaches.

BY

N. A. PASHAYAN, M.D.

SCHENECTADY, N. Y.

In frequency and prevalence headache occupies a foremost rank in the list of human ailments. In fact, there are few individuals who sometime or other do not make its acquaintance. As a single or concomitant symptom it is met with in a variety of conditions. We often find it associated with many acute febrile diseases such as influenza, typhoid fever. In metabolic disorders such as gout, rheumatism, diabetes and gastro-hepatic atony it is a common complaint. Eye strain, diseases of the nasopharynx and accessory sinuses are notorious as reflex causes. In organic brain lesions such as meningitis, hydrocephalus, tumor and abscesses, headache is invariably present. Neurasthenics very frequently complain of headache and clonus hystericus has even assumed a distinct name for itself. Disturbances of circulation, from arteriosclerosis to organic heart lesions contribute their share to the etiology of this symptom.

Numerous as are the various factors that may give rise to headache we wish to refer only to certain types of it that are periodic in their nature, recur frequently and entail considerable suffering. The discovery of the coal-tar products has gone far in alleviating headaches temporarily, but unfortunately this class of cases obtain very little relief from these analgesics and shift from orangein powders to the latest brands of the acetanilid mixtures. So that any measures that can serve to lessen the frequency and severity of these attacks are worth our study.

First we may consider that type of headache that is usually associated with menses in women. It either precedes or follows the catamenia. The distinguishing features of this variety are that the headache starts at the base of the skull and spreads towards the occiput, involving the mastoids as well. There is often a steady or throbbing pain, in some instances reaching the intensity of an agony. The vessels of the neck are full and prominent, the eyes look suffused, while the hands and feet are cold. As a rule no nausea or vertigo are present. Instinctively the patients incline their heads backward and thereby seem to get some relief. In one case to our knowledge the severe headache, the retraction

of the neck aroused the suspicion of meningitis in the attending physician. As soon as the flow is established the headache subsides and eventually disappears. Strange it is how some women regularly and unmistakably enter this cycle of their lives with an attack of headache and look upon it as a part of the program.

When we look for the pathology of this condition it is apparent that the immediate cause of the headache is cerebral congestion, especially involving the basal meninges. Why should a physiological function as menstruation cause cerebral congestion in some women is not clear but it appears that the victims of this particular disorder are women whose menstrual function is tardy, the flow is not established until a day or more elapses and then it is scanty. Could we divert the congestion of the brain to the pelvic viscera, deplete the first and engorge the latter, the attacks would be warded off. We have two remedies that alone or in combination are capable to bring about this result. Of these ergot is the most potent and cimicifuga comes next. As a vaso-contractor and circulatory equalizer ergot is the best agent we have at our disposal. Its well-known tonic and stimulating effect upon the uterus makes it doubly valuable. Cimicifuga acts as a true emmenagogue and on all kinds of utero-ovarian diseases it has a sedative and selective influence. To secure the beneficent effect of these remedies they should be given about a week before the expected period and continued until its termination. Where the headache has the tendency to follow the menses the treatment should begin with the onset of the flow and kept up until the habitual time of the attack is past gone. Often the addition of some bromid seems to enhance the value of the mixture, as the majority of these women are more or less of neurasthenic type.

To avoid any misunderstanding it is well to recall that women about the time of menstruation are subject to other kinds of pain in the head that are not congestive and should be differentiated. Subjects of migraine are particularly liable to have an attack about this time. The same holds true for trifacial and cervico-occipital neuralgias. In these cases, especially the latter group the treatment above outlined seem to have slight influence in aborting the attacks. Butyl chloral hydrate combined with cannabis indica seem to be the analgesics of choice in treating the neuralgias.

Another group might be conveniently considered here, in whom the headache is analogous in all essentials to the congestive type but bears no relationship to the menses. Nor are the attacks limited to the female sex. The headaches recur at irregular intervals, are very severe, confined to the base of the skull and mastoids, involving also the areas

supplied by the cervico-occipital nerves. The attacks are precipitated by over-work, fatigue, anger and even oversleep. The subjects, as a rule, are young, and on slight provocation experience a feeling as if the blood was rushing to their heads. Their faces get red and pale very readily, and the underlying condition seems to be a vaso-motor irritability. A course with bromides, ergot and nitroglycerine, the last not to exceed gr. 1-200, has proved of value. Some patients also derive considerable benefit from the high-frequency currents applied to the neck and back of the head.

Another group related to the congestive type of headache comprise those women who have suffered with migraine in their early life, and with the onset of the menopause the attacks of migraine have ceased and are replaced by this variety of headache. There is a remarkable uniformity in the manner that the headache makes its appearance in these cases. At first the patient feels drowsy and appears unable to prevent yawning. Then the vessels of the neck become swollen so that some have to loosen their collars. An agonizing pain strikes the base of the brain and darts through to the forehead. Pressure around the neck gives temporary relief. Seldom they feel nauseated or have vertigo. Gradually the pain spreads along the spine to the extremities and disappears, leaving a sense of numbness and tingling behind. These attacks recur in some with astonishing regularity, not as to the day but even to the hour. No line of treatment has, as far as we know, proved of decided benefit to these patients. Continuous counter-irritation, as with a seton, would seem worthy of trial. One case of this kind by changing her residence has remained free for several months, while for years every other Sunday she had not escaped one attack.

Periodical headache is sometimes seen in comparatively young men and women whose arteries are prematurely sclerosed and whose blood pressure is above the normal continuously or shows marked exacerbations. One man, aged 35, moulder by occupation, several months ago began to have some pain in the head that would come on regularly every Saturday afternoon and last until Sunday night. The pain was intense and compelled him to go to bed. It was located over the right eye-brow. He has been examined by a competent rhinologist, who could find no focal disease in the nose or sinuses to account for the pain. His peripheral arteries, especially the radials, were greatly thickened and rarely ever seen in men under the age of 70. The blood pressure ranged above 160. He was put on small doses of iodids and every Friday and Saturday morning free catharsis induced. Three hours before the expected headache he was given some aconite and the dose repeated

at night and the following morning. In this way the attacks were aborted for several weeks in succession, when the patient was lost sight of. Another patient, subject to obstinate constipation, suffered with a dull, heavy headache every third or fourth day, and the ordinary analgesics were useless in offering him any relief. His arteries were moderately thickened, the blood pressure averaged about 200. The apex of the heart was in the mammary line and the second aortic sound was accentuated. In addition there was polyuria. With strict vegetable diet and daily drastic catharsis the headache was markedly relieved.

Lastly, we may briefly refer to an affection which is not a mere headache, properly speaking, yet can be advantageously here included; *viz.*, migraine, or what is popularly known as sick headache. It is a widespread affection and there are few ailments that inflict more suffering than does this upon its victims. Its periodicity and the explosive character of its symptoms have led some authors to link it with epilepsy. The fact, also, that there have been cases in whom one disease has alternated and replaced the other has lent considerable support to this view. The symptomatology of the disease, as in epilepsy, consists of some prodromata, headache, nausea and vomiting. In the majority of the instances the aura pertain to vision and range from amblyopia to hemianopsia, even actual hallucinations. The commonest warning is made up of some blurred vision or scintillations. Differing from epilepsy, the duration of these warnings is much longer and may last half an hour or more. A very unusual phenomenon occurred in a patient who had his first attack of migraine at the age of 36. One day, while busy at his desk, suddenly a large mass of cloud he saw at a distance. It gradually came closer to him until he was completely enveloped by it. Then it began to recede in slow degrees and vanished about half an hour after it made its first appearance. As soon as this apparition was lost sight of, an intense headache assailed him in full force. All patients do not have premonitory symptoms, however; some wake up in the morning with the pain.

The pain in hemicrania is, as a rule, unilateral and limited to one or the other supraorbital region. Occasionally it may involve all the branches of the fifth nerve. It is further more cumulative and grows in intensity as the hours go by, and reaches its climax with the onset of nausea and vomiting. Some get relief from emesis and others dread the nausea worse than the headache.

Clinically, three varieties of migraine are recognized. (a) Sensory or ophthalmic type. (b) Motor or ophthalmoplegic type. (c) Psychic type. In the ophthalmoplegic variety, in addition to the three cardinal symptoms, we have a paralysis of some of the ocular muscles. The

commonest involved are those supplied by the third nerve so that we may have a complete external as well as internal ophthalmoplegia. Rarely the external rectus or the superior oblique are paralyzed. The paralysis lasts usually about two weeks and then disappears. The psychic variety is extremely rare. The headache and the nausea are accompanied or replaced by certain mental symptoms. It may be a mere confusion of ideas of emotional depression with anxiety.

Mention should be made of certain vaso-motor phenomena that are observed with undue prominence in some of the cases and have been regarded by some as furnishing the key-note to the mystery of the disease. At the outset of an attack some patients look extremely pale, their hands and feet are cold, they may even experience some rigor. On the other hand, others complain of the converse of these symptoms. The first are recognized as the angiospastic and the latter as the angioporoetic type.

The pathology of the disorder, however, is unknown. There is no unanimous answer as to what causes these vaso-motor disturbances. To dub it with the title of a neurosis has thrown no light upon the subject. We know that it is notoriously hereditary and transmitted from one generation into another. Excitement, fear, anger, fatigue, poor ventilation and even one hour's longer stay in bed will precipitate an attack. Excluding all cases that are secondary to eye strain, be it astigmatic or mere orthophoria, and also those cases that are the result from nasopharyngeal anomalies, there still remain a large majority that are to be treated on empirical lines, and no relief can be expected from glasses or operative measures. The most widely accepted view of the disease is that it is due to some metabolic disorder, the nature of which is undetermined. It is a fact that most of these patients are habitually constipated. Even those who have a daily evacuation of the bowels develop a peculiar odor in their breaths a day or two before an attack. Recently three patients have noticed a reduction in the amount of urine voided, and in one of these cases it could be actually demonstrated that there was perceptible reduction in the total solids excreted. Yet this phase of the question needs further study and determination.

Practically speaking, much can be done to ameliorate the condition of these unfortunate sufferers, although a complete cure seems to be out of the question. Among hygienic measures the most important are fresh air, life in the open whenever possible, abstinence from meat and other diet rich in proteid. Where a tendency to constipation exists a mixture of sodium salicylate, sodium phosphate and sodium sulphate is given daily on rising in the morning in a glass of hot water. Otherwise once or twice free catharsis is resorted to. As a specific medicament

small doses of bromids with cannabis indica have proved the most serviceable. In cases that manifest marked vaso-motor symptoms, angiospastic or otherwise, nitroglycerine gr. 1-200 and strychnine gr. 1-60 can be advantageously given. The majority of these cases are decidedly neurasthenic and derive considerable benefit from the glycerin, ophosphate of lime and syrup iodid of iron, especially when we can adopt a full or partial Weir Mitchell rest treatment. Now and again we meet with cases that are intolerant of any medicinal treatment. Continuous counter-irritation to the back of the neck is said to work well. OSLER speaks approvingly of it in the last edition of his "Practice of Medicine." Some writers have advocated the injection of alcohol into the supraorbital nerve as it is practised in tic douloureux. This may work well in certain neuralgic conditions of this nerve, but in true migraine little is to be expected from this procedure.—*New York State Journal of Medicine.*

The Present Position of Vaccine Therapy.

THIRTY years have elapsed since the system of treatment by the inoculation of vaccines—as now understood—has been introduced to the profession. It has become so familiar a method of therapeutics, and has indeed acquired so fashionable a vogue, that it may be said to be quite an ordinary mode of treatment. The use of a vaccine is now a matter of everyday practice, and the ubiquitous advertisements of all manners of stock vaccines which appear in the medical press render it difficult to resist the temptation to employ them as opportunity offers. The pioneers of therapeutic inoculation never tire of warning practitioners that they should not venture upon the use of these remedies without having previously mastered the principles upon which this method of treatment is based. Perhaps the exposition of these principles was at first somewhat difficult to follow, involved in cumbersome technicalities and savouring of the mysterious. This difficulty often discouraged the seeker after information; but now this obstacle has been removed from the path of knowledge. The fundamental principles of vaccine therapy have been simplified and clearly elucidated, and no practitioner who will give the subject a moderate amount of time and a fair amount of attention need remain in ignorance. One of the best, clearest and most concise guides to the subject will be found in a recent work by DR. CARMALT JONES.* All the essential information is set forth so lucidly that the reader cannot fail to see and appreciate the *rationale* of the treatment.

* "Introduction to Therapeutic Inoculation," by D. W. Carmalt Jones, M.A., M.D., M.R.C.P., Assistant Physician and Director of the Department of Bacterio-Therapeutics, Westminster Hospital. Published by Macmillan and Co., Ltd., London, 1911. Price 3s. 6d. net; pp. 171.

Having mastered these principles, one is in a position to employ the treatment in practice, and we propose to follow DR. CARMALT JONES in showing its applications in general practice, as well as its limitations. We may premise by reminding the reader that a vaccine is a solution consisting of 1 per cent. sodium chloride and $\frac{1}{2}$ per cent. of carbolic acid, containing killed organisms in suspension. All vaccines are standardized to contain a known number of organisms in each cubic centimetre. The only exception to this rule concerns tuberculin, which is prepared from ground-up tubercle bacilli, and the dose thereof is regulated according to the weight of these organisms, expressed in fractions of a milligramme.

SUPPURATIVE LESIONS OF THE SKIN.

Clinically this group consists mainly of recurring abscesses or boils. Bacteriologically the staphylococcus is usually responsible, sometimes complicated by the streptococcus. The average initial dose is 50 million organisms, and this will often cause boils to abort rapidly. If the large dose of 500 million be given, the boils will suppurate violently and break. The clinical condition must decide as to whether it is more prudent to attempt the abortion of the boils, or to induce their rapid breaking. Usually it is better to begin with the smaller dose and to increase the dose by 100 millions at an interval of ten days, the duration of the treatment being determined by the rate of improvement. Stock vaccines of staphylococci may safely be used in these cases, and great success has attended their employment for whitlows; but in these lesions there is a greater probability of the presence of a streptococcal infection. Chronic septic ulcers of the skin may be included in this group. Examinations of films or cultures from these lesions show that these are due to a mixed infection of staphylococci and streptococci. Treatment should begin with a vaccine containing 100 million of the former and 3 million of the latter, increasing the dose by 50 million and 1 million weekly. The dose should, however, not go beyond 500 million for the staphylococci, and 15 million for streptococci.

ACNE VULGARIS.

The acne bacillus is well recognized as the cause of this condition, but perhaps most of the cases are complicated with the staphylococcus; and it is therefore necessary to precede the treatment by an examination of the contents of the acne pustule, to determine whether a single or a mixed vaccine is required. The average dose of the acne vaccine is four million of the organisms, and this must be combined with staphylococcal vaccine if the bacteriological examination reveals the presence of

this organism. The injections should be repeated weekly, and the treatment will no doubt be prolonged in accordance with the chronicity of the disease.

ERYSIPELAS.

This disease is caused by the specific *streptococcus erysipelas* (of FÄHLEISEN, and according to some observers its treatment by vaccines exercises a markedly beneficial effect on its course, reducing the pyrexia, diminishing the complications, and shortening its whole duration. Stock vaccines, which are prepared from a variety of cases, may be employed quite safely, but it is necessary to regulate the initial dose in inverse proportion to the severity of the attack; thus 10 millions should be injected in a severe case, and 20 millions in a mild one. The injection must be repeated on the following day, and then on alternate days until the activity of the disease has abated; but while the condition is severe the dose must be comparatively small.

PYORRHOEA ALVEOLARIS.

Oral sepsis is now held to be responsible for every wide range of disease, and therefore its effectual treatment would take high rank as a therapeutic triumph. Vaccine therapy should never be relied upon, alone, for this purpose. Thorough dental treatment is indispensable. DR. CARMALT JONES holds that the organism mainly responsible is the *streptococcus brevis*, and the dose suggested is 20 millions, rising to 30. The bacterial flora of a septic mouth is intensely luxuriant, and therefore many of these cases will require inoculation with supplementary vaccines—generally with the *micrococcus catarrhalis* or some coliform bacillus. The theory that rheumatoid arthritis is a toxic manifestation of oral sepsis lends an added interest to the vaccine treatment of septic states of the mouth.

PHTHISIS.

The use of tuberculin is a wise addition to all those hygienic methods of treatment which aim at promoting resistance. The dose must, however, be very small, i. e., 1-50,000 of a milligramme, gradually rising to 1-15,000 of a milligramme. Statistics show that 50 per cent. of the cases derive real benefit from the inoculation. One of the great difficulties to contend with in phthisis is that of auto-inoculation, which rather upsets the accuracy of dosage administered by injection.

WHOOPIING-COUGH.

This is one of the latest diseases to come under the sway of vaccine therapy. DRs. BORDET and GENGOU, of Brussels, recently found that the bronchial mucus which forms at onset of the disease is crowded with a small *cocco-bacillus*, in pure culture. The vaccine made from

this organism may be injected in doses of 100-200 millions, and it has the effect of reducing the duration of the disease from an average of seven weeks to one of four weeks.

BRONCHIAL ASTHMA.

A stock vaccine for bronchial asthma has been prepared. The initial dose is 25 millions, the second dose, after a week, should be 50 millions, and this should be continued weekly. The treatment is highly empirical, because the organism which is allied to the *micrococcus catarrhalis*, is very frequently not to be found in the sputum. This disease is essentially one in which an autogenous vaccine ought to be prepared, but there are many recorded cases of improvement after inoculation with the stock vaccine. In chronic bronchitis, which is so often associated with asthma, the bacterial flora is very extensive, including the *pneumococcus*, *micrococcus*, *B. septus*, *B. influenzae*, *B. Friedlander*, and coliform bacilli. The difficulty of selecting an appropriate vaccine in these cases is, therefore, evident.

ACUTE PNEUMONIA.

If it is proposed to treat this disease with vaccines, the inoculation must be made without any delay, a 20 or 30-million dose of the stock pneumococcic vaccine being used. Then immediate steps are required for the preparation of an autogenous vaccine from the organisms which are obtained from the sputum, or blood, or by lung puncture. As soon as this is ready, another injection is to be given, and subsequent inoculations are to be controlled by the clinical condition. The number of cases treated in this manner have been too few to warrant any definite conclusions. The greatest value of an appropriate pneumococcus vaccine has been manifested in cases of chronic pneumonia and pneumococcic empyema. The general therapeutics of pneumonia must never be neglected for vaccine treatment.

SURGICAL TUBERCULOSIS.

Joints.—All cases should receive the benefit of treatment by tuberculin, in addition to the ordinary surgical measures with the provision that operative procedure should be limited to what is urgently necessary. The initial dose of tuberculin should be 1-12,000 of a milligramme, gradually increasing to 1-5,000 of a milligramme, at intervals of ten days. Some of the most brilliant successes of vaccine therapy have been achieved in this class of case, but treatment is often required for a prolonged period.

Bones.—Tubercular disease of bones is frequently complicated by a streptococcal or staphylococcal infection. This introduces difficulty in

the treatment, and the results are not so good as in cases of pure tubercular infection. The dose of tuberculin is the same as that for joint disease, but the appropriate vaccine for the secondary infection will also be required. The great advantage of this mode of treatment is the avoidance of the extensive exploratory operations which are a feature of the usual surgical methods.

Glands.—Tuberculin treatment may be undertaken with confidence in children under five years of age, and in youths from 15-20. The results at any rate equal those yielded by operation. From the age of 5-15 the number of cures will only amount to 50 per cent., as the resisting powers are difficult during this period. In successful cases the glands either disappear altogether, or shrivel to minute proportions. Local treatment is essential; thus if there be sources of irritation in bad teeth, otorrhœa, or pediculi, these must receive attention. If the glands are suppurative the pus must be withdrawn by aspiration.

Genito-Urinary Organs.—Some veritable triumphs have signalized the vaccine treatment of tuberculosis of these organs. Excellent results have been recorded in affections of the testis, kidneys and bladder, but as these lesions are so frequently examples of mixed infection, the diagnosis becomes a matter of all importance. It really resolves itself into a difficult problem of analytical bacteriology, and sometimes as many as three different organisms have to be dealt with, especially in cases of cystitis.

Eye Diseases.—Tubercle may attack the cornea or the iris. For tubercular keratitis the initial dose should be 1-20,000 of a milligramme. A similar dose is appropriate for tubercle of the iris, in which condition vaccine therapy produces excellent results.

GONORRHOEA.

Vaccine treatment of this disease is well adapted for general practice. A dose of 25 million should be injected at the onset, and a somewhat larger dose on the eighth or tenth day. Urethral syringing with permanganate of potash must be practised twice daily, and scrupulous cleanliness must be observed. The attack will usually subside soon after a fortnight; but if there be any delay another injection of 100 million is called for. It may even be necessary to repeat this dose, or even increase it after ten days if cure is not complete. There is no treatment to equal vaccine therapy in cases of chronic gonorrhœa or gonorrhœal arthritis.

The foregoing notes, based mainly on the recently published book of Dr. CARMALT JONES, constitute only the merest skeleton of the subject. They are offered only as a rough indication of the opportunities

which vaccine therapy affords for applying its methods to some of the commoner conditions in which it has been found useful. The whole principle of the treatment is essentially rational, and the empirical adoption of its methods would spell defiance to its cardinal principles. A certain amount of routine prescription is undoubtedly convenient for general practice, but it must be strongly emphasized that therapeutic inoculation can never be satisfactorily practised by rote. It must be controlled by careful clinical and precise scientific observation.—*Folia Therapeutica.*

DISEASES OF THE EAR, NOSE AND THROAT.

By DUNDAS GRANT, M.D., F.R.C.S.

Case of Polypi in the Nose and Antra.

THE patient came to me on account of obstruction in both nostrils. She had suffered from this for several years, and on several occasions polypi had been removed. Both nasal cavities were completely obstructed; on trans-illumination I found also that both antra were opaque. There was no pronounced purulent secretion in the nose such as one would expect if the dullness on trans-illumination were due simply to the presence of pus or of inflammatory thickening of the mucous membrane. I then punctured each antrum through the outer wall of the inferior meatus of the nose by means of Lichtwitz's fine trocar and cannula, and by means of a Higginson's syringe attached to the cannula forced a little air through. On the right side this caused considerable discomfort, and no air could be heard to escape from the natural orifice in the middle meatus; moreover, the point of the cannula appeared to impinge upon soft tissue, so far as it was possible to make this out in view of the cannula being gripped in the orifice it had made for itself through the outer lamella of the turbinated bone. On the left side a little air could be forced through. In view of the fact that there were nasal polypi growing from the middle meatus of the nose, I felt justified in supposing that the antra were occupied by polypi. Accordingly I opened each antrum through the canine fossa, and this I had the less hesitation in doing as the teeth corresponding to the floor of the antra were either absent or merely represented by stumps. When the right antrum was opened I was able to extract a large number of thin elongated polypi smeared with cheesy muco-pus. I scraped the mucous membrane of the antrum by means of curved spoons, and removed a large portion of the outer wall of the middle meatus, mainly the uncinate process of the ethmoid, with polypoid excrescences attached to it. I removed the intra-nasal polypi by means of snares and Luc's polypus forceps. I

then proceeded to make an opening in the inferior meatus of the nose for the purpose of draining the fundus of the antrum. I did this by means of a pointed mushroom-headed borer, first introduced to my notice by Professor Onodi, enlarging the opening subsequently by means of a sliding punch. I then plugged the cavity with iodoform ribbon gauze through this opening, pulling the gauze into position through the opening in the canine fossa and packing it lightly, leaving the end exposed at the anterior nares. The operation on this side was completed by stitching up the incision in the right canine fossa by means of soft catgut sutures. The same proceedings were carried out on the left side, the only difference on opening being that the polypi did not completely fill the cavity, and that they were bathed in a quantity of foetid liquid pus. The plugs were removed in twenty-four hours, and apart from a slight pain in the right cheek the patient was quite comfortable.

The main point of interest in this case is the factor in the diagnosis, namely the dullness on trans-illumination, the absence on one side and extremely small quantity on the other side of purulent fluid, the obstruction to the passage of air through the middle meatus with the simultaneous presence of large masses of polypi in the nasal cavity, the whole being so pronounced as to demand free opening of the maxillary antrum.—*The Polyclinic.*

MEDICO--LEGAL.

1.—Death from a Medico-Legal Aspect.

DEATH, even when it is the consequence of disease, is often an unexpected event. But if an individual expires under his own roof, surrounded by friends and relatives, we are disposed to consider it as an ordinary dispensation of Providence, and one to which all of us are sooner or later doomed. The features of the case differ materially when a person is found dead on the highway, on the banks of a river, or in a lonely place. Indeed, if he be discovered to have paid the last debt of mortality, either in a sudden manner or at a distance from his home, the laws of civilised society demand an investigation of the cause, and over this investigation the officer called a coroner is appointed to preside.

THE QUESTION OF DEATH.

The opinion of the physician as to the reality of a death may be sought under the following circumstances: (1) Where the person has directed by will that before being finally "screwed down" he shall be certified by a competent authority to be dead; (2) where, owing to certain exceptional occurrences, such as post-mortem hæmorrhages, the

turning of a body in the coffin and other effects resulting from the development of the gases of putrefaction, or to the slowness with which from accidental causes putrefaction may develop itself, or to the unaltered and life-like condition of the face and countenance not infrequent after certain forms of death, or to the retardation of post-mortem cooling, a medical opinion confirmatory of the reality of the death is sought by the relatives; (3) where, in cases of succession to titles or large property, the relatives require a certificate of the reality of the death; (4) and lastly, cases arise where, a dead body being found, the opinion of the medical jurist as to the interval that has elapsed since death.

The medical jurist, in determining the reality of death, must convince himself not only of the entire cessation, but of the continuous cessation, of the action of the heart; for the heart may seem to cease for a time, yet after a brief interval recommence action. To decide the absolute absence of all cardiac sounds, auscultation and palpation in a perfectly quiet room are necessary. And this examination must include not merely the regions of the heart proper, but of the chest generally, remembering that both the position and the sounds of the heart may be abnormal. Assuming that this absence of cardiac sounds is continuous, and not merely accidental, it should be determined by careful auscultation for two or three hours, at intervals of fifteen minutes. There can be no doubt that recovery has taken place after the heart has, at any rate apparently, ceased beating for a quarter of an hour. In the case of children, efficient means have succeeded in restoring vitality where for fifteen or thirty minutes after birth no pulsations could be detected.

Although the fact of death is to be determined by no single sign but by a combination of several tests, the entire and the continuous cessation of the heart's action undoubtedly ranks first in importance. Breathing being a vital act, any long suspension of this function must prove fatal. The time that people can "hold their breath" varies greatly, but three minutes and a half may be taken as a maximum. This, however, refers only to the absolute and voluntary cessation of breathing. To commit suicide by holding one's breath is a practical impossibility. It is certain that life may be prolonged considerably beyond three and half minutes when the stoppage is involuntary, or when the slightest attempt at respiration, however slow and shallow, is made.

SOMATIC AND MOLECULAR DEATH.

It is very necessary for the medical jurist thoroughly to appreciate the importance of the distinction between systematic or somatic death and death of the tissues or molecular death. In profound syncope, for example, there is every external appearance of death; but if the heart resumes

its function, the patient recovers. Hence the necessity of careful study of the phenomena which succeed death in order to be able to distinguish between real and apparent death. In awarding the Manni prize, founded for the discovery of a certain sign of death, the French commissioners very properly dwelt upon the state of the heart as furnishing the most unequivocal proof of death before the occurrence of cadaveric rigidity and putrefaction. Bouchut, to whom the prize was awarded in 1846, found, in an extensive series of researches, experimentally confirmed by other commissioners themselves, that in all cases of apparent death, whether arising from asphyxia or syncope, there is one common character by which they may be distinguished from real death, and that is a continuance of the pulsations of the heart. He established the fact that in the most perfect state of syncope, attended with entire loss of motion and sensation, as well as cooling of the body, the contractions of the heart were not really at any time suspended, but simply reduced in force and frequency. In syncope from hæmorrhage carried to the fullest extent, and in cases in which respiration was either imperceptible or carried on at long intervals, the body at the same time having the aspect of a corpse, he was enabled by auscultation to detect the pulsations of the heart, and thus to distinguish apparent from real death. In children born in a state of apparent death and in cases of asphyxia from any cause, in narcotic poisoning, in hysterical and epileptic coma, and in all diseases which have been stated to resemble apparent death, the living has been easily distinguished from the dead body by the continuance of the heart's action. This was feeble and took place at intervals, but it was always sufficiently marked to enable a professional man to distinguish a living from a dead body.

A number of tests have been devised in order to determine whether the circulation has or has not ceased, such as examining the hand of the supposed dead person by transmitted light. During life the margins, the tips, and the web of the fingers appear red and translucent; after death the fingers appear opaque up to their edges. On tying a piece of string round a finger its distal end becomes swollen and bluish-red if the circulation continues; if it has ceased, no effect is produced.

After the occurrence of somatic death—that is, after permanent cessation of respiration and circulation—certain phenomena occur in definite order. The time occupied by many of these phenomena, although variable, is limited; and consequently, by ascertaining the stage at which they have arrived, an opportunity is afforded of approximately estimating the interval that has elapsed between death and the period of investigation. These phenomena are manifestations of the occurrence

of molecular death. The rapidity of their onset is to some extent determined by conditions which exercise an influence on the amount of vital energy with which the tissues are endowed immediately before somatic death. Such conditions comprise disease, poison, violent exercise, and other exhausting influences. If the tissues are depressed in vitality at the moment of somatic death they rapidly succumb to molecular death, and the course of the succeeding phenomena is hastened. If, on the other hand, they are in full activity when somatic death takes place, they resist the advent of processes which are really the antecedents of decomposition.

During life the healthy body has a warmth (independently of the surrounding temperature) of from 97° to 100° F. After death a gradual and progressive loss of heat occurs both externally and internally, until in time the temperature of the body becomes almost the same as that of the medium by which it is surrounded. Post-mortem cooling, however, derives its special medico-legal importance from the fact that this loss of heat is progressive. Temperature thus becomes, in many cases, not merely a sign of death, but an indication of the time that a body has been dead. All observations on temperature should be thermometric. In forensic cases both the external and the internal temperature should be recorded. The external temperature, as a rule, sinks more rapidly than the internal, the skin and solids of the body generally being bad heat conductors. Again, the temperature should be taken at stated intervals, remembering that it is not the absolute temperature which is so important medico-legally as the progressive and continuous cooling of the body. In ordinary cases a body becomes cold in from fifteen to twenty hours after death. In certain cases of disease, or where the body has been freely exposed to air, draughts, etc., the cooling process may practically be complete after four to five hours; whilst in certain other exceptional diseases, or under unfavourable conditions for cooling, forty-eight hours, or even three days, may elapse before the body is cold. Of all the changes that occur in the dead body, that of cooling down to the temperature of its surroundings is the one about which we have the most knowledge. Its rate with very few exceptions, obeys laws which are comparatively well understood, and it is perhaps the most reliable change by which to calculate the time since death.

After death the body parts with its internal heat by radiation, so that the superficial temperature may rise above that which existed before death. Usually, there is no further generation of heat when life is extinct, but in certain cases, as in death from cholera or yellow fever,

and some cerebro-spinal diseases, the temperature of the dead body has been observed to rise considerably above the normal temperature of life. Nor is the extinction of animal heat a sure means of determining the time of death; for the rate of cooling varies with the age, the cause of death, the treatment of the body itself, and the state of the atmosphere; so that the period of cooling may vary from two or three hours to fifteen or twenty, and may even extend to upwards of four days. In death from chronic diseases, where there has been great wasting (phthisis, cancer, oesophageal disease, etc.), in cholera, after great losses of blood, etc., the body usually cools rapidly—so rapidly, indeed, that in three, four, or five hours its external temperature may be almost identical with that of the surrounding medium. Of other causes of rapid cooling may be mentioned: the body being exposed to air and cold draughts in a more or less uncovered state; the size of the apartment where the body lies, cooling being more rapid in a large and draughty room than in a small, warm one. The bodies of children and of old persons cool more rapidly than those of ordinary adults. The bodies of lean people cool more rapidly than those of stout.

For some time after somatic death the muscles retain their irritability, and contract if stimulated. The duration of this irritability does not, as a rule, extend beyond two or three hours, and when it ceases cadaveric rigidity sets in. Before, however, rigidity becomes marked, the irritability of the muscles may be restored by the injection of defibrinated arterial blood or aerated venous blood through the vessels. The irritability lasts longer in a low temperature than a higher one. Muscles become rigid at high temperatures. So long as the muscles remain flaccid they retain their irritability, and respond to electrical stimuli in the same way that they do in life; this is due to the persistence of molecular or tissue life after the cessation of somatic life. At a variable period after death the muscles of the lower jaw begin to stiffen; this is the first indication of the onset of cadaveric rigidity, or, as it is also called, "rigor mortis." Under ordinary circumstances the skeletal muscles begin to stiffen in from four to ten hours after death. The stiffening spreads from the muscles of the jaw to those of the face, neck, and trunk, and lastly to the limbs. It is fully developed in from two to three hours, when the entire body is firm and stiff. The limbs cannot be flexed at their joints without considerable force, and the body when moved behaves as though it was devoid of articulation.—*The Hospital.*

(To be continued.)

SURGERY.

Surgical Cases With Comments.

BY

J. JACKSON CLARKE, M.B. (LOND.), F.R.C.S.

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Case I.—Pyosalpinx.

A MARRIED woman, aged 29, had been treated for a vaginal discharge (gonorrhœa) for twelve days when symptoms of salpingitis intervened. She was admitted to the Hampstead General Hospital under my care on September 6. The temperature was then 101° F. Patient was suffering from very severe pain which caused her to faint once. She had had no vomiting. There was the usual tender swelling in the right vaginal fornix, and it was also palpable from the abdomen in the right iliac region. The lymphatic glands in the groin were also swollen.

Operation same day. The right Fallopian tube was distended to the size of a hen's egg, and the appendix and a loop of ileum were adherent to it by plastic lymph; also the right ovary, to twice its normal size, was adherent to the back and under side of the tumour. All these parts were deep red in colour where not covered by grey lymph. After packing off surrounding viscera, etc., the distended tube was removed, and 2 oz. of thick pus escaped whilst this was being done. The adherent intestine was separated, and the appendix and ovary removed, and a tube placed in the cavity. The gauze packing was then removed, and the wound closed except at the lower part where the tube lay. Relief from pain was immediate and recovery uninterrupted, patient leaving hospital on October 9, a slight vaginal discharge continuing.

Comments.—In cases of this kind the question whether drainage should be done through the vagina or by the abdominal incision arises. In the present instance, considering the condition of the surrounding parts, I was glad that I proceeded as I did. Had I been content with vaginal drainage, pain would have continued from the inflamed ovary, and in all probability intestinal obstruction would have been caused by the adhesion of the loop of ileum to the pelvic organs. The patient presented herself for examination on October 16, and was then free from abdominal symptoms, though a slight vaginal discharge continued.

There are many such cases in which the surgeon is called upon to deal with gynaecological conditions, such as ruptured tubal gestation, pyosalpinx combined with appendicitis, ovarian tumour with twisted pedicle, impacted or bleeding fibroids.

On the other hand, the gynaecologist may be confronted with a sudden call to remove a section of the bowel, bladder, or other organ: thus Kelly, in the course of hysterectomy for fibroids, was called upon to remove a portion of the transverse colon, which communicated with an abscess cavity in the tumour.

Surgeons should make themselves familiar with the pelvis, and the gynaecologist with the rest of the abdominal cavity, both for purposes of diagnosis and for unexpected complications.

Case II.—Sudden Hæmorrhage from one Kidney, Pelvis and Ureter.

A very unusual case was brought to my notice by Dr. Pidcock, who asked me to see a woman, aged 56, who had had no previous renal or other symptoms until the previous day, when she began to pass blood by the urethra. The urine looked like clotted arterial blood. About a pint had been passed shortly before our seeing the patient. The bladder was distended and slightly tender. The patient was removed at once to the Hampstead General Hospital, where the following notes were taken by Mr. Geoffrey Holmes, House Surgeon.

September 20.—Bladder washed out—completely filled with blood-clot.

September 25.—Right ureter seen by Kelly's speculum to be filled with blood-clot; left normal. Mr. Jackson Clarke cut down on the right kidney and found it much engorged. The pelvis of the kidney and ureter were distended with blood and softened. Right kidney and ureter removed.

September 25.—Wound clean. Drainage tube removed. Sharp attack of cystitis, now in full swing. Irrigation with boric lotion had no effect. Urine full of pus and very ammoniacal; very little blood in urine now.

September 27.—No blood; urine clearer. Bladder irrigated with 1—10,000 biniodide for one day of good effect, but 1—15,000 silver nitrate substituted as the mercury was too painful.

October 1.—Stitches out.

October 9.—Wound healed; urine clear. Pelvis apparently quite well.

October 16.—Urine acid, a little pus, no blood. Sp. gr. 1010.

On examining the parts after removal the kidney was found to be larger and rather firmer than normal, congested. At the lower end was a thrombus, apparently in a small vein. The pelvis and ureter were intensely congested, and studded with minute submucous hæmorrhages. The walls of both were much softened.

The pathological examination by Dr. J. A. Torrens revealed beyond the hæmorrhagic condition of the pelvis and ureter, some interstitial fibrosis of the kidney; the clot noticed by naked-eye is partly within what may be the thickened wall of a blood-vessel, which appears to have ruptured, for the remainder of this clot lies against the kidney substance. There is no evidence of growth. There is extravasated blood between the tubules. The section of the pelvis shows the submucous hæmorrhages, and the epithelium raised up and ruptured over the pin's-head-sized hæmorrhages.

Comments.—The case is somewhat puzzling. In scurvy and hæmorrhagic small-pox the urine may appear to be like blood, but in this case there were no general symptoms of these or any other disease. That rare condition (cystic ureteritis) is accompanied by hæmorrhage, but there were no cysts present. One thing is pretty certain: if the kidney and ureter had not been removed the patient would have succumbed to hæmorrhage or subsequent sepsis.

Case III.—Painful Spine.

A single woman, aged 23, sent to me from near Bath, complained of her spine having been painful for some years. The trouble was worse when patient was standing. There had never been any girdle pain. A year ago she noticed the second toe of the left foot was numb. There was tenderness over the spinous processes from the seventh dorsal to the first lumbar, and over the sacrum. Tested several times on February 4 the anæsthetic area in the left foot was always limited to the same area; the plantar surface of the second toe, and an oval area of skin, continues with this; and the dorsal aspect of the fourth and fifth toes, and a contiguous part of the skin of the dorsum of the foot.

The knee-jerks were exaggerated, and there was no Babinsky sign.

The temperature and other functions were normal. The patient had been confined to bed for some weeks. She had suffered from constipation and headache. I concluded that the pain in the back was functional to a large extent, but that there must be some affection of one of the posterior nerve-roots to account for the definitely localized anæsthetic areas. The first step in treatment was to clear the bowels by calomel and saline, and follow this by a nightly dose of cascara, and to order a nutritious light diet. The anæsthetic areas diminished in extent slowly, and on February 23 a painless, papulo-vascular eruption appeared in these areas. Massage to the back and legs was begun on the same date. On March 3 patient was walking about, and on the 7th full diet and cod-liver oil emulsion were ordered. On March 12 she was sent home free from all symptoms.

Comments.—Had this case not been dealt with promptly and energetically, the patient might have become a chronic spinal neurasthenic. Constipation and auto-intoxication best explain the symptoms.—*The Polyclinic.*

OBSTETRICS AND GYNÆCOLOGY.

Thyroid Gland and Generative Organs.

GOODALL and CONN conclude a study on this subject as follows:—(1) The relation between the female genitals and the thyroid is very intimate. (2) The generative organs which stand in such close relation with the thyroid are the ovaries. (3) The uterus is devoid of any influence upon thyroid activity, except in that its function may affect the ovarian function and through this the thyroid. (4) The thyroid activity is in a measure under the governance of ovarian activity. (5) Ovarian hyperactivity is a frequent cause of the development of exophthalmic goitre. (6) Diminished or absent ovarian activity usually coincides with myxedema. (7) Puberty, menstruation, pregnancy, lactation and menopause exercise a profound influence upon the thyroid secretion. (8) Thyroid secretion and ovarian secretion do not supplement each other; they neutralise each other. (9) The ovary has two secreting structures, the corpora lutea and the intestinal cells. (10) It is the secretions from the latter which seem to bring the ovary and thyroid into such close relation.—*The Calcutta Medical Journal.*

Metrorrhagia.

Amand Routh, M.D., F.R.C.P.—The writer does not use the term "metrorrhagia" in its strict sense of *uterine* hæmorrhage, but rather of irregular hæmorrhages *from the vagina*. Irregular hæmorrhages from the uterus may occur at any age. Take first *infancy*. It may occur in the new-born, and within a few months or years of birth. Amongst the commonest causes at this age are minute elongated mucous polypi. They are difficult to detect, but are easily dealt with by twisting off through a very small speculum. A much more serious condition, which occurs in infancy and childhood, is a curious grape-like sarcoma, which consists of irregular masses of thin-walled vesicles growing from the cervix or endo-cervix. The only other condition which need be mentioned in infancy and childhood is carcinoma of the ovary. It is usually primary and not secondary to growths in other organs as more often occurs in women. Prompt removal offers

the only chance of recovery, and so also with sarcoma of the cervix and uterus, though no case of permanent recovery has been recorded, patients dying from metastatic growths if they recover from the operation.

At *puberty* a curious condition of menorrhagia followed by a continual loss for weeks or months is common and occurs without apparent cause. This metrorrhagia, or if you like, menorrhagia, taxes all efforts in bad cases. Abroad some of these cases have been actually treated by hysterectomy—a treatment which at such an age is abhorrent, and which must be rarely necessary. Examination, which should be done under an anæsthetic, usually shows nothing abnormal. If you want to dilate the cervix to explore the uterus, hoping to find a polypus or adenoma, you will find it dilates with extreme ease; you can almost dilate it with the finger, for unlike an ordinary uterus, it is very soft. But microscopically, nothing beyond an increased blood-supply has been found.

There are other cases due to elongated mucous polypi. These are sometimes 2 or 3 in. long and hang out of the cervix, and may appear at the vulva. They may disappear, probably because they are drawn up into the uterus by suction. This has led to disagreement in diagnosis. Why these polypi grow is not known. They are innocent and the treatment is to remove them by torsion under anæsthesia. If there is bleeding at the stump, apply the actual canter, or plug the cervix tightly with gauze, for at this age the uterine contraction is very ineffectual. At this age, too, the grape-like sarcoma of the cervix already alluded to is more common than in infancy.

Between *puberty and the menopause*, always keep in mind the possibility of pregnancy, however unlikely it may seem. A woman who married at the age of 44 years was sent to the writer 6 months later with a letter from her doctor, saying that she had a fibroid tumour and was losing blood continuously. She was 4 to 5 months pregnant, and had a cervical mucous polypus of the size of a pea. The polypus was twisted off. As she was 44 the doctor had not thought of pregnancy. There was a tumour reaching nearly to the umbilicus, and he assumed that fibroids explained both the bleeding and the tumour. In another case a doctor treated a woman with menorrhagia due to a fibroid. Two or three years afterwards she called again complaining of continuous hæmorrhage, and he found the tumour rather larger. He never suspected pregnancy, though she had been recently married, and unfortunately passed the sound, apparently to discover how much larger the uterus was. The abortion, which was no doubt threatening when she saw him,

rapidly came on, and he was sued for damages for malpractice. The writer tried to show that it was a mistake which any one might have made and he won his case, but had to pay his costs.

Hæmorrhage between puberty and the menopause may come from many places. Take first the vulva, where the commonest cause is ulceration of different sorts, the most frequent of which is syphilitic (primary or tertiary). Tubercular ulceration is much rarer and rarely causes bleeding. Malignant ulceration of the vulva at this age is very rare. Bleeding ulcers from injuries, or from such unusual causes as ruptured veins, and hæmatomata may be named. Vascular caruncle is stated to be a cause of hæmorrhage from the vulva, but usually it is so painful at this age that contact with it is avoided, and hæmorrhage rarely occurs. Hæmorrhage from the vagina at this time of life is much rarer than after the menopause. Thus a woman may have sarcoma of the upper part of the vagina but that is much rarer than in childhood. The main cause of vaginal ulceration is syphilis, primary or tertiary, and foreign bodies. The writer has seen only one case of primary chancre of the vagina. There was hæmorrhagic offensive discharge, and a hard flat ulcer of the size of a half-penny was felt on one side of the vagina, nearly half-way up. It never occurred to the writer that it was a primary chancre. He thought it was probably malignant, although the patient was only about 40. When excised the microscope showed it to be hard chancre, and secondary rashes and iritis subsequently developed.

The commonest vaginal cause of hæmorrhage is the presence of foreign bodies, of which neglected pessaries are the most frequent. They are difficult to remove when deeply embedded in the mucous membrane, even supposing they have not burrowed into the rectum or bladder, as they used to do in past years. Ring pessaries get embedded in the mucous membrane, causing an offensive discharge of blood and pus, which may suggest malignant disease. The best way to remove an imbedded ring pessary is not to cut the mucous membrane which has grown over it, but to cut through the ring pessary and rotate it out.

Suppose that there is nothing wrong with the vulva and the vagina, and the finger is passed on to the cervix. There are large number of cervical conditions which may cause metrorrhagia. The commonest is polypi-mucous polypi, growing from the endo-cervix, or fibroid polypus, projecting into or protruding from the cervix. The commonest of all is a mucous polypus, which is often liable to be missed because it is so soft. If you examine simply with the finger you may not detect it, even if you are expecting to find it. It is as soft as a pregnant cervix, so that you do not feel the first contact with it. In the case of the

pregnant cervix the softening gives rise to "apparent shortening." Sometimes the mucous polypus is pushed into the cervix by the examining finger, making detection still more difficult. If in the least doubt, therefore, examine with a Fergusson's speculum, and then you will be able to see the red colour of the polypus.

Although mucous polypus can be dealt with simply by twisting off and then applying the actual cautery to its base or plugging the cervix, it is far better to do this under an anæsthetic. It also not infrequently happens that the discharge from a mucous polypus has been infected, that there is some infective endo-cervicitis, and if you are not careful, some septic inflammatory trouble may follow from absorption through the raw surface which you have made. Therefore, it is best to have the patient in bed, and anæsthetised. Then you can render every thing perfectly aseptic, and if necessary dilate and explore the rest of the uterus, because not infrequently above the mucous polypus there may be another, or fungous hypertrophic "endometritis" may be present. If a fibroid polypus is present you cannot twist it off without leaving a ragged stump. The proper treatment is to cut through the pedicle with scissors. The pedicle, like the fibroid, consist of muscular tissue, which contracts and retracts, and although there may be a sharp spurt of blood, it speedily stops. Be careful to make sure that you are dealing with a polypus and not with an inverted uterus, or with a fibroid plus inversion, because a fibroid will drag down the wall of the uterus. If you are incautious you may find that you have cut into the uterine wall more than you have intended to, or even that there is some peritoneum on the portion removed.

Another condition common in the cervix at these ages, nearer 40 than 35, and nearer 50 than 40, is carcinoma. In women with cancer the uterus is affected in 25 per cent., and of these the cervix is the site in 96 per cent. The commonest forms are adeno-carcinoma just inside the cervix, which begins to protrude as a large growth, and squamous epithelioma of the vaginal portion, of which the latter is much the more frequent. The finger will at once detect the irregular friable hard growth, and is a better guide than a speculum. If in doubt pass a speculum and remove a piece for microscopic examination. Pressure with the point of a sound is also a useful help in diagnosis. If the sound glances off the apparent growth and does not penetrate it on pressure, you may be fairly certain it is not carcinoma, but if it does penetrate it, it is fairly certain that it is carcinoma. The mere appearance, as seen through the speculum, does not always help. The treatment will depend upon the extent the tissues are invaded and the condition of the patient. But by Wertheim's operation it is possible to operate for advanced carcinoma which a few

years ago was inoperable. It is not yet established that the 18 per cent. mortality of this extensive operation is counterbalanced by any increase in permanent cures of those who survive. The writer does not advocate Wertheim's operation in either very early or very advanced cases.

Erosion of the cervix does not often cause hæmorrhage excepting the papillary form with marked glandular overgrowth. The erosion is practically a benign adenoma, a glandular projection covered with columnar epithelium, which has sprouted through and taken the place of the squamous epithelium of the vaginal portion of the cervix. It is usually associated with endo-cervicitis and with pain in the left ovarian region, and may cause hæmorrhage on coitus or when instruments are used. Even jolting in omnibuses may produce a discharge stained with blood. Erosion of the cervix has to be diagnosed from carcinoma. The papillary form is usually treated by scraping and applying strong caustics, such as nitrate of silver, or a solution of 8 per cent. of sulphate of copper, poured down through a Fergusson's speculum, or painting with liquor iodi or iodised phenol twice or thrice. These will almost always cure the condition. But it is sure to recur if there is a definite causative condition of the cervix or the endometrium. Ulcerations of the cervix are rare and mostly associated with ill-fitting pessaries, especially pessaries with cross bars. Nowadays one does not use intra-uterine stem-pessaries, but they again were constant sources of cervical ulceration. Other ulcerations are produced on the cervix and cause some metrorrhagia when the uterus is procident and the cervix comes outside the vulva. The ulcerations are not on the two sides where the uterus would come in contact with the thighs in walking, but on the anterior and posterior aspects, where it is apt to get soiled with urine and fæces. Nitrate of silver applied to the ulcer followed by reposition of the uterus, and perhaps packing the vagina lightly with gauze, with douching afterwards, is sufficient to cure them.

Of true metrorrhagia, bleeding at irregular periods from the uterus itself, there are few constitutional causes, though there are many for menorrhagia. Metrorrhagia may occur in connection with alcoholism, often associated with cirrhosis of the liver, but not necessarily. It is frequently seen in hospital cases. If a woman who has been losing for 6 months continuously be admitted, kept in bed, put on ordinary diet and her bowels opened, the bleeding will stop. Her idea was that the more she lost the more stimulant she ought to take to help her to bear the loss, with the result that the hæmorrhage persisted.

Menorrhagia, and more rarely metrorrhagia, is as definite a symptom in early myxœdema as amenorrhœa is in acromegaly. In the acute

infectious diseases it is also said to be a common condition. The writer has seen it in 2 or 3 cases of heart disease.

Subinvolution does not cause metrorrhagia so much as menorrhagia, unless it is associated with either retroversion, which is often the case, or some product of conception is retained, or there is overgrowth of the lining membrane of the uterus. In subinvolution the muscle is too bulky, and the individual muscle-cells are too large and unhealthy, and there may be a small-celled inflammatory exudation. But in addition to that there is an adenomatous condition of the mucous membrane, sometimes starting from patches of decidua left behind as islands of gland tissue, which rapidly extend. The treatment is to replace the retroverted uterus, to make a few applications to the lining membrane of it of liq. iodi (1 in 4) which is better than anything; to introduce a suitable Hodge pessary, and give ergot and sulphate of magnesia. Curettage is occasionally required.

Fibroids produce metrorrhagia as well as menorrhagia. Submucous fibroids, if they get near the mucous membrane, are sure to cause overgrowth of the mucous membrane around, and the hæmorrhage is then really due to the adenomatous endometrium. If you find a bulky uterus, irregular in shape, with metrorrhagia, and you have excluded subinvolution, it becomes necessary to explore. That can generally be done by putting the patient under an anæsthetic and dilating with bougies. At this age it is not necessary, as some say, always to dilate beforehand with tents. If a tampon of glycerine or a glycerine pessary is inserted into the vagina an hour before, the cervix yields in a remarkable way. It begins to secrete and becomes physiologically active, which makes it relax. If the fibroid is in such a position that the pedicle can be reached, cut it through with scissors, and, as already said, there is no danger of hæmorrhage. If you cut the fibroid polypus away in pieces the uterus would contract down on to your finger as bits were removed. In many cases it is not possible to remove submucous fibroids from the uterus, and it is necessary to do abdominal or vaginal hysterectomy.

Of the condition described as adenomyoma—an adenoma mixed up with the muscle tissues of the fibroid—we do not know much yet. It has lately been shown that this adonoma comes from the mucous membrane of the uterus, working away often in tortuous strands from the mucosa. If septic endometritis is present there is danger that may spread the infection along these adenoid in-growths, and it may set up septic changes in the uterine fibroid itself.

Mucous polypi of the body of the uterus are rather rare and may occur at almost any age, and cause metrorrhagia.

Fibrosis of the uterus is another cause of hæmorrhage. There are two or three forms. It sometimes runs a chronic metritis course, with small-celled infiltration; in another form the vessels are degenerate, almost an arterio-capillary fibrosis, so that they fail to retract; in another the muscle-tissue is fibrosed and has lost retractile power. Bleeding is profuse and more intractable than in fibroids. The diagnosis may be made by exclusion, and by the fact that treatment fails. In severe cases there is no known treatment except hysterectomy and the woman will die if it is not done.

Chronic inversion of the uterus may be either a survival of acute inversion after parturition or due to a polypus dragging on the uterine wall. It always produces metrorrhagia. The different forms of growth in the uterus, sarcomata, carcinomata, malignant adenomata, etc., can be accurately determined only by exploratory dilatation of the cervix. If you cannot get your finger in to feel the growth, you must use a small curette to remove pieces for microscopic examination. If necessary the uterus should be removed by hysterectomy in a few days. Most of these malignant intra-uterine growths, however, occur after the menopause.

With regard to affections of the Fallopian tubes, putting aside tubal pregnancy, the commonest cause of metrorrhagia is chronic salpingitis, often the result of a neglected gonorrhœal infection. Metrorrhagia may also be due to primary cancer of the Fallopian tube, the main symptom being characteristic—a watery blood-stained discharge, with pelvic aching.

Other local causes, apart from those connected with the uterus and tubes, are first of all ovarian cysts. They do not often produce metrorrhagia, but sometimes quite small cysts will do so by interfering with the venous return of blood from the uterus, causing metrorrhagia. Inflammatory conditions of the pelvis, perimetritis and parametritis, are generally, in their progress, associated with metrorrhagia. It is one of the most hopeful signs in an acute pelvic attack when a slight loss of blood comes on and lasts 10-days or so, as it generally means that the acute symptoms are abating. Hæmatocœle, from whatever cause, is sure to produce metrorrhagia from interference with the circulation.

After the menopause and in old age malignant disease is the prevailing cause of metrorrhagia. The commonest cause of hæmorrhage from the vulva is epithelioma, growing from somewhere near the clitoris, or the labia minora. In the vagina the commonest cause is senile vaginitis. A woman has marked cachexia and an offensive blood-stained discharge

from the vagina, and you naturally fear malignant disease. You may, however, find senile adhesive ulcerative vaginitis—the vagina puckered up and narrowed by adhesions, with the formation of pockets in which pus collects, and resulting offensive discharge. If you stretch the vagina, break down these adhesions, apply nitrate of silver, and keep the vagina distended with gauze and douche it at intervals, you will cure the discharge, although it is apt to recur. The danger is that a few years afterwards epithelioma may develop. Primary squamous epithelioma of the vagina is another cause, but it is very rare.

In the cervix epithelioma is common after the menopause, especially from 50 to 60. Polypi occur in the cervix at all ages.

The body of the uterus may be affected with so-called atrophic endometritis, which seems to be not a true inflammation, but a fibrosis. It is associated with an intractable and generally offensive discharge of blood and matter, owing to infection from the vagina. The cervix undergoes senile atrophy, and a pyometra results. Consequently cure is very difficult, and it may be necessary to remove the uterus. You may try to cure by dilating up and curetting the endometrium and applying liq. iodi, but the cervix soon contracts down again, and another pyometra reforms.

Carcinoma, sarcoma, and malignant adenomata, etc., of the body of the uterus are diagnosed by dilating and removing some of the growth with a small curette and examining it microscopically. In old age an ovarian cyst is more likely to cause metrorrhagia than before the menopause. Small ovarian cysts, dermoid, or otherwise, no bigger than a golf-ball, will cause continuous loss in a woman after the menopause. Therefore these small bodies have to be searched for. Primary carcinoma of the tube already mentioned is more common in old age than between 40 and 50.

The Metrorrhagia of Pregnancy.—Many of the conditions mentioned may be associated with this and lead one astray. The mistaken diagnosis due to hæmorrhage during pregnancy from a mucous polypus has been mentioned. But apart from complications of pregnancy, if the ovum has perished and has not come away (missed abortion) or if only some of it has come away (incomplete abortion) or if there is merely impending abortion, metrorrhagia may go on for weeks. There may be a blood mole or hydatid mole. In the former case the uterus will suddenly increase, and then begin to diminish in size, but will not get quite small. The blood mole may remain *in utero* and then come away with little pain during what is supposed to be an ordinary period, several

months later. In hydatid mole the uterus is usually larger, but not necessarily so, and of course there are no foetal movements or sounds, and no outline to be felt, and the discharge is of rather watery red-currant-juice description. Tubal pregnancy, tubal abortion, and missed tubal abortion and ruptured tube will all give rise to metrorrhagia.—*The Medical review.*

OTOLOGY.

Modern Aids to Diagnosis in Otology and their Significance.

BY

JAMES F. MCKERNON, M.D.

During the last five years, several aids of recognized value in diagnosis have been placed in the hands of the otologist for daily use. Some are merely confirmatory of clinical evidence presented, others are of the utmost value from the stand-point of a positive diagnosis. The writer will discuss these under separate headings.

1. Blood. (a) Leucocyte and Differential Count. (b) Cultures.
2. Labyrinthitis. 3. Lumbar puncture. 4. Radiology.

LEUCOCYTE AND DIFFERENTIAL BLOOD COUNT.—From a series of blood examinations in over four hundred cases, he believes that these will show two things. First, the resisting power of the patient, as shown by the number of leucocytes present, which, if over fifteen thousand, shows a good resistance. If daily examinations show a steadily increasing number of white cells, we may safely infer that the patient's resistance is improving, even though the inflammatory process is more pronounced. If, on the other hand, there is a small number of leucocytes from the first, the patient's resistance to the disease is poor, and during the further progress of the disease, should they steadily decrease, the resistance becomes still poorer, and many times is an indication for an urgent operation, or calls for one being done earlier than would otherwise be necessary.

The second thing of great value, from the clinical stand-point, is the polymorphonuclear percentage, which shows positively the amount of absorption taking place in the system as a result of the existing suppurative process. The normal percentage in the adult varies from fifty-five to seventy; in the young child from forty-two to sixty. In a suppurative lesion of the mastoid process without complications, the polymorphonuclear percentage usually ranges from seventy to eighty. When adjacent structures are involved, as the blood current in the sinus of

vein, it ranges from eighty to ninety-six per cent. In other words, the higher the polynuclear percentage, the greater the absorption and the more urgent the demand for operative procedure, and this is especially true if frequent examinations show a steadily decreasing number of leucocytes. If, however, repeated examinations show a decreasing polynuclear percentage, with a stationary or slowly decreasing leucocyte count, it is evident that the suppurative process is diminishing, and that nature is eliminating the poison from the system. The relation between the leucocytosis and polynucleosis is the valuable feature. Increasing leucocytosis with stationary or falling polynucleosis indicates better resistance and less absorption, while decreasing leucocytosis and increasing polynucleosis indicates loss of resistance and greater absorption.

It must, however, be borne in mind that a suppurative process in a bone cavity does not show as high a polynuclear percentage as when present in the soft tissues of the body. While this differential blood count and the leucocyte count are of value in determining the absorption and body resistance, they should by no means supplant the clinical evidence as presented by the patient, but should be utilized as one of the links in the chain of diagnosis confirmatory of the clinical and physical signs exhibited.

BLOOD CULTURES.—Libman, Sondern, and others have given us valuable aid from the laboratory in determining the condition of the blood current in phlebitis of the sinus, bulb, and vein, and by availing ourselves of this aid, we may many times be enabled to make a much earlier positive diagnosis of involvement of these structures than if we had awaited the development of a majority of the classical symptoms that usually accompany this disease.

The technique for obtaining the blood is simple. Under strict aseptic precautions, a small needle is introduced directly into one of the veins of the arm (pressure having been first exerted above), and a sufficient quantity of blood is drawn into the syringe. The amount usually necessary for the cultures is 5 c.c. or more. This is incubated at 37.5°C. in flasks of bouillon and glucose bouillon and in plates of nutrient agar, glucose agar, and serum agar. These cultures are examined at intervals of eighteen hours for a number of days. If the infection is of an active or virulent type of a rapidly growing organism, a well-developed growth is usually found at the end of eighteen hours; but if no growth can be demonstrated, the cultures should again be placed in the oven and subjected to a longer period of incubation, as a negative result, at this time, does not mean that there is no bacteremia. If, at the end of forty-eight

hours, no growth can be demonstrated, it is probable that no bacteremia exists, though there are frequent exceptions to this rule. In two cases of the writer, a growth did not show in the culture in one instance until after fifty hours' incubation, and in the second until after the culture had been in the incubator fifty-six hours. Both of these cases were of the less active type of infection, and showed, upon operation, a firmly organized clot with no tendency to disintegration. Should the first blood culture be negative, and the clinical symptoms as exhibited by the patient continue, then other cultures should be taken, for a thrombus may be present in the sinus or bulb, and still not show in the blood by one or more cultures. The explanation of this is that at the time the negative culture was taken there were no bacteria being given off from the phlebotic area on account of the firmly organized clot; but later, when softening and disintegration took place, colonies of bacteria were loosened from the thrombotic area and thrown into the general circulation, and the blood extracted from the vein at this time will show a true bacteremia present, so that a negative culture with a continuance of pyemic symptoms of a low grade does not mean that there is absence of involvement of the sinus, and repeated cultures should be made. The most frequent infection found in phlebitis of the sinus or bulb, is that of the streptococcus; after this is the staphylococcus, and still a pneumococemia may and does occur occasionally. I have never found it associated with a sinus or bulb phlebitis.

While the writer does not wish to be understood as advocating waiting in all cases for a positive blood culture before operating, he does, however, urge that a blood culture be taken and repeated if necessary provided the clinical evidence as presented by the patient is not sufficient for a positive diagnosis. If it be sufficient for such a diagnosis, then the culture is merely a confirmatory but most valuable aid. It is the opinion of the writer, based upon the results of a large number of blood cultures, that a smaller number of operations on the sinus, either exploratory or complete, would be done were the blood cultures made a part of the routine practice of the otologist in these suspected cases of sinus involvement. Before leaving this subject a word of warning may not be amiss, and that is that a suppurative process existing in other parts of the body can and does give rise to a bacteremia of the blood current, and the existence of such a condition should be eliminated prior to localizing it in the sinus or bulb.

LABYRINTHITIS.—Labyrinthine suppuration occurs during the course of an acute or chronic purulent otitis media, more frequently associated with the latter. Its onset is marked by symptoms referable

to both the cochlear and vestibular apparatus. If diffuse in character, the hearing is absent, there is extreme vertigo, nausea, and vomiting; equilibrium is disturbed, and there is present a spontaneous rotary nystagmus to the diseased side. These symptoms rapidly abate, and disappear entirely in a few days. The spontaneous nystagmus, at first to the diseased side, changes in direction to the sound side. This, however, disappears as the centres accommodate themselves to the altered conditions. Observation has taught us that in the presence of a completely destroyed labyrinth, spontaneous symptoms will be absent unless the case be observed at a very early period of the disease. The diagnosis of destruction of the labyrinth is then to be made by systematic functional examination. First, by means of a suitable apparatus for excluding the hearing ear, such as the noise apparatus of Barony. Hearing for the voice is absent on the diseased side. Second, tuning-fork tests by air conduction are negative, as is the Galton whistle. Third, the Weber test refers the fork to the good ear. Fourth, absolute bone conduction is negative. The Rinne test is not suitable of application, as the fork will not be heard by either air or bone conduction. Fifth the fistula, compression, or aspiration test can be used by fitting a tip connected with a Politzer bag snugly into the external auditory meatus. Should a fistula be present and the vestibular apparatus be functioning, compression of the bag will be followed by a slow conjugate deviation of the eyes. On aspiration there will also be a slow conjugate deviation, but in the opposite direction. As a result of this fistula test when, positive, observation shows not only the presence of a fistula but also demonstrates that the vestibular apparatus of the patient is functioning, the natural conclusion being that we are dealing with a circumscribed labyrinthitis.

The normal vestibular apparatus may be experimentally stimulated and nystagmus produced by rotation, by the application of a stream of hot or cold water to its outer wall, and by the application of the galvanic current in front of the tragus. Space does not permit of a detailed description of the normal reactions to these various tests, but brief mention will be made of the method of applying them in the presence of a non-functioning vestibular apparatus.

ROTATION TEST.—The patient is seated in a revolving chair and turned ten times to the right. The duration of the resulting nystagmus from the moment when rotation ceases until its complete disappearance is carefully noted in seconds. The patient is then rotated ten times to the left, and a similar observation with regard to the nystagmus is made. If both vestibular apparatus are normal, these

observations should practically agree, the average duration with the head erect being thirty-five seconds. Should one vestibular apparatus be destroyed, there will still be nystagmus after rotation in both directions, but there will be a marked difference in duration. Should this difference be as great as three to one, we are in possession of strong presumptive evidence of destruction of the vestibular apparatus on the side showing the smaller amount of nystagmus.

CALORIC TEST.—Irrigation of an ear with water above the body temperature, with head erect, will give rise to a rotary nystagmus to the same side; irrigation with cold water will give rise to rotary nystagmus to the opposite side. When the vestibular apparatus is not functioning, it is evident that no such reaction can take place, the end organ of the vestibular nerve having been destroyed. It therefore follows that when a diffuse purulent labyrinthitis is present, both caloric tests will be negative. In making the hot water test, the temperature of the water must be above that of the body temperature. For the reaction to cold, the temperature of the water should be about 68°F. The reaction to the galvanic test is of less importance in making the diagnosis in very recent cases and need not be further discussed here.

To sum up briefly, when we have reason to suspect an invasion of the labyrinth, the hearing should first be tested; the presence or absence of spontaneous nystagmus should be noted; the presence of a fistula should be looked for, and careful observations made of the reactions to the rotation and caloric tests. On the results obtained from these various tests, a diagnosis of invasion of the labyrinth can be made; the extent of such invasion, whether diffuse or circumscribed, can be determined, and the nature of the operative measures necessary for relief can be mapped out.

PERILABYRINTHITIS.—Frequently a patient who has been the subject of a chronic purulent otitis media will complain of recurring attacks of vertigo and disturbances of equilibrium. Examination of such a patient does not demonstrate the presence of a fistulous opening in the labyrinthine capsule, and the reactions to rotation and caloric tests are obtained even more readily than when the middle ear is normal. The functional examination of the hearing locates the lesion in the conducting mechanism. It is evident that there is no disease of the labyrinth itself, and the conclusions seem well founded, that the labyrinthine symptoms are produced by pressure due to an extension of the necrotic process to the dense labyrinthine capsule. The vestibular apparatus, far from being destroyed, is hypersensitive, and the cold caloric reaction

can be obtained with water at a temperature as high as 86° F. It can readily be seen that such a condition present is an urgent indication for a radical operation on the middle ear to prevent a further extension into the labyrinth.

LUMBAR PUNCTURE.—A determination of the quality and character of the cerebrospinal fluid in disease is often of the utmost value from a diagnostic stand-point. By its early withdrawal from the spinal canal we are made acquainted with its quantity, as determined by the amount coming through the canula, showing whether it be in excess of the normal amount, and whether it shows evidence of increased pressure beyond the normal as it is being drawn. The character of the fluid as drawn may show us at once evidence of disease of the meninges. At times, when drawn, it appears, macroscopically, normal, but upon subjecting it to chemical, microscopic, and bacteriologic examinations, we frequently obtain early and valuable information as to the intracranial conditions existing, and thus are often enabled to make an early diagnosis not only of meningitis, but its type as well, when otherwise it would have been necessary to wait some time before the classical symptoms of the disease became sufficiently manifest for recognition.

Its examination is also frequently of value in a differential diagnosis between an atypical brain abscess, encephalitis, and meningitis. During the past two years, early and frequent examinations of the cerebrospinal fluid have proven of the utmost value to the writer in making an early diagnosis of purulent meningitis, and thus leading to prompt and efficient measures for its relief and cure before the system became depleted by the advanced ravages of the disease.

RADIOLOGY.—X-ray pictures of the mastoid in disease are fairly accurate, especially if one has studied a series of plates of the mastoid process in health and in disease, which I believe it is necessary to do in order that proper and accurate deductions may be made. It is of especial value as an aid in diagnosis in obscure and chronic cases. There are but few cases of the acute type when it is necessary to have a radiogram taken, as the clinical symptoms and physical signs are usually so pronounced that a diagnosis can easily be made without any additional aids. It is, however, of distinct value in certain cases of the chronic type, where there is an absence of all the usual clinical symptoms and physical signs. Here a radiogram taken of the suspected side and compared with the opposite or normal side, shows, in many cases, a thickening and obliteration of the cellular structure with occasional bone defects around the antrum, showing a large cavity, marked cloudiness of the cell, with complete or

partial obliteration of the trabeculae, indicating the presence of pus in the mastoid. At times in the adult mastoid, a radiogram will show one or more cells cloudy, while others closely adjacent are perfectly clear. These cells contain pus and are easier to demonstrate than when the entire structure is involved. If one makes a practice of radiology in his mastoid work, it is always essential to obtain any previous aural history as an aid to the more accurate interpretation of the plates taken.

In the experience of the writer, radiograms of the sigmoid sinus do not show at all distinctly unless there is pus present; a thrombus gives a very unsatisfactory picture.

In localizing brain abscess, tumours of the brain, gumma, etc., its use and value has been demonstrated, but it is only after a careful study of a large number of radiographs taken of this region, that it becomes of distinct value as an aid in diagnosis, for it is only by comparison of plates of the normal, as well as of the suspected, cases that we are able to interpret the pathological from the normal conditions.

While it may possibly seem that too much importance has been placed upon some of these aids in diagnosis, the writer would again emphasize the fact that they should in no way supplant the clinical evidence presented by the patient, but in the difficult and obscure cases their use may lead to earlier, accurate diagnosis, and thus the harmful or fatal delay in awaiting classical symptoms may be avoided.—*The Canadian Medical Journal.*

Cases and Comments.

A Case of Spurious Pregnancy and its Treatment.

BY

A. NATESA AIYAR.

Physician and Surgeon, Mayavaram.

A primipara of well built constitution aged 18, Brahmin, was brought with a view to ascertain clearly the exact nature of her pregnancy. What caused suspicion regarding the true state or otherwise of pregnancy, the following history will disclose:—

According to the statement of her relatives, she is a primipara with abdominal enlargement, and with the attendant pregnant symptoms (such as stoppage of menstrual flow, etc.) for a period of more than 20 months. No sign of labour pain, not even false labour pain, occurred during this period even after the 10th month. This unduly long period with the delay in the long expected birth of the child raised their suspicion as regards its true nature. There was no history of such an occur-

rence among female members in either family (husband's or wife's). Hence her presence before a medical man.

To all external appearance she was a full-termed pregnant woman with enlarged abdomen and with extremities swollen (hypertrophied condition of the muscles of the extremities in general). There was milk in the breast with the characteristic secondary areola round the nipple. There were all the objective signs to regard this as one of pregnancy. As regards the subjective ones:—She never felt the quickening, the movement of the child in uterus, at any part of this long period; but she felt as if there was a tumour-like thing stuck up to the lower abdominal wall, with a characteristic heaviness about it and a dragging down sensation of something while walking as well as in her other deportments.

On palpating the abdomen, there was no tumour to be felt anywhere in the lower abdomen nor in the pelvic cavity. The abdominal protuberance did not permit the easy plunge of the finger in the pelvic cavity, to feel for any tumour.

Percussion elicited tympanetic note in the abdomen and not the characteristic dull note if a tumour were to be present.

Auscultation revealed no foetal heart sound, nor the funic sauffle heard.

No vaginal examination made as there are no female experts available here.

From the result of the above examination of the case under consideration, it was inferred that it was not one of pregnancy but otherwise. No tumour, however, was to be felt. So suspecting this to be one of spurious pregnancy, it was resolved to try under an anæsthetic.

Accordingly the patient was administered chloroform. While she was coming under its influence there was a gradual but noticeable lessening in the abdominal enlargement. By the time she was completely under, the apparent large abdominal protuberance vanished. There was nothing to indicate the presence of a tumour, nothing to be felt in the uterus. While the chloroform was removed, and while its diminishing effects began to show themselves, the flattened abdomen commenced to become protuberant and by the time she regained her senses she was again a *pregnant* woman, to all intents and purposes. This test completely excluded pregnancy.

So it was decided finally that this was one of spurious pregnancy. Accordingly she was treated for the same in the following manner:—

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She was given Mixture Magnesi et Magnes Sulphatis 3 ozs. early morning in empty stomach every alternate day for a week, and during the days she took the medicine she was having three or four motions. There was no alteration made in her usual vegetarian Brahmin diet, except that she was specially asked to use more than the ordinary quantity of asafoetida in the culinary preparations.

From the beginning of the 2nd week she was prescribed the following:—

Tinct. Valerian, Ammon	...	1	dr.	Zinc Valerian	..	24	grs.
Vinum colchicum	...	1	dr.	Pill Aloes et Myrrh	..	48	grs.
Syrupus Sarsaparilla	..	1½	dr.	Ext. Nuxvomica	..	8	grs.
Aqua	ad.	3	oz.	Ext. Gentian	..	Q.	S.
Sig Ft. Mist 1 oz T. D.				Sig Ft. pulvis into	..	24	
				1 to be swallowed morn and even.			

For the 1st fortnight nothing was noticeable. Then a change for the better appeared to take place. The hypertrophied extremities commenced to reduce gradually in size. There was a lessening in the abdominal enlargement.

By the end of the 3rd week there was a noticeable lessening in the size of the extremities as well as of the abdominal protuberance. The feeling of heaviness in the lower abdomen in her deportments began to disappear gradually. She felt herself light in her movements.

During this period her appetite was not as it should be. Her tongue was foul and coated in the centre. Bowels regular—one motion every morning. No rise of temperature.

By the beginning of the 4th week she no longer looked a woman with a foetus in her womb. To all external appearances she was an ordinary looking young woman.

On the 29th day from the administration of the above remedies menstrual flow for the first time after 21 months began to appear. The discharge lasted only for 2 days. This settled the diagnosis. (This recommencement of the physiological action of the uterus clearly confirmed the diagnosis of this case as one of spurious pregnancy).

She was insisted on continuing the same mixture and pills for another month to ensure that periodical menstrual flow has commenced in right earnest. Accordingly the mixture and pills were taken regularly.

Again after the lapse of 28 days from the last menstruation the uterine menstrual discharge commenced to flow. This time the flow continued, however, for 3 days. She was discharged with 50 pills of the above prescription with directions to be taken as before. Ever since she is all right.

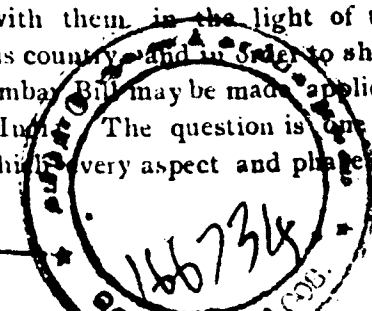
attached to the present Bill, according to which Doctor, Bachelor and Licentiate of Medicine and Master, Bachelor and Licentiate of Surgery of the University of Bombay, or Calcutta, or Madras, or Allahabad, or Lahore, and any person trained in a Government Medical College or School, who holds a Diploma or Certificate granted by Government declaring him to be qualified to practise medicine, surgery and midwifery, or to be qualified for the duties of a Military Assistant Surgeon, Hospital Assistant or Sub-Assistant Surgeon, are all qualified to be registered. Government will recognise only those who possess these qualifications. But while the Bill seeks thus to improve the status of qualified medical men, it places no direct restriction upon the practice of Indian *Vaidhs* and *Hakims*.

With regard to the machinery to be created, the Bombay Bill proposes to form a Medical Council consisting of thirteen members appointed in the following manner:—

- (1) A President nominated by the Governor-in-Council.
- (2) Six members nominated by the Governor-in-Council.
- (3) Four members elected by the Doctors, Bachelors and Licentiates of Surgery of the University of Bombay.

(4) Two members elected by the medical practitioners who for the time being are practising in the Bombay Presidency and are registered under the new law or under the Medical Act, and who are not Graduates in Medicine or Surgery or Licentiates in Medicine or Licentiates in Medicine and Surgery of the University of Bombay.

The Medical Council so constituted may direct that the name of any medical practitioner who has, in their opinion, been guilty of any grave misconduct or unprofessional act shall be removed from the Register, and over the Medical Council the Governor-in-Council exercises a general control. These form the main provisions of the Bill now before the Bombay public. The details of the measure, under the three heads we have indicated, are many and complex, so much so that the main issues cannot be considered without reference to them. On a future occasion we shall deal with them in the light of the conditions of medical practice in this country, and in order to show how far and what portions of the Bombay Bill may be made applicable, by similar legislation, elsewhere in India. The question is one of great importance, in the discussion of which every aspect and phase of it will have to be deeply considered.



city of South India would enjoy an efficient degree of sanitation is the statesman that should prescribe for preventable disease—than the doctor.

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 The Polyclinic. The Bristol Medico-Chirurgical Journal. The International Journal of Surgery. The American Journal of Clinical Medicine. The Dietetic and Hygienic Gazette. The good health. The Medical Gazette. The Practical Medicine. The Sanitary and Journal of Sanitary and Municipal Engineering. The Cumberland and Durham Medical Journal. The Canada Lancet. The American Journal of Ophthalmology. The China Medical Missionary. The Medical Review of Reviews. The Post Graduate. The Canadian Practitioner and Review. The Australasian Gazette. The Caledonian Medical Journal. The Canadian Journal. The Monthly Cyclopaedia of Practical Medicine. The Ophthalmoscope. The Dental Era. The Interstate Medical Journal. The Medical Notes and Queries. The India Medical Journal. Folia Therapeutica. The Indian Medical Journal. The New York State Journal of Medicine. The Hospital. The Medical Review. The Medico-Surgical Journal. The Journal of Door Life. Bulletin Journal of the New Animal Therapy. Journal of Practical Dietetics and Bacterio Therapeutics. The Medical International Review of Medicine and Therapeutics.

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disablement allowance" (10s. a week). And Doctors, the Chancellor assures us, will find in these members patients for whose care they are to be paid for. Surely any system must be welcome to us when it promises a courteous treatment to a good proportion of a doctor's patients. So far, the National Insurance Bill has nothing but praise to shower. We realise that sound statesmanship alone can alleviate sick suffering, rather than the scattered and unaided efforts of science.

Other items in the British programme of Government social relief are the establishment of sanatoria for consumptives, the provision for lectures and publication of information on questions of health. In Germany, popular lectures and the distribution of information regarding the elementary principles of health have achieved a great deal of good. Indian cities can do nothing but adopt these measures that have been successful elsewhere. With reference to the establishment of sanatoria, there is some truth in what Mr. Lloyd George said—that they are being a bit overdone. If the sanatoria go on only for favourable cases for treatment, the segregation of all the infectious cases cannot be carried out thoroughly. If, on the other hand, the sanatoria are merely educative in their functions, and intended to teach the tuberculous recruits to adopt a kind of anti-tuberculous mode of living, the period of retention of the patients may be shortened, and the necessity for an increase in the number of sanatoria obviated for time at least. The rush for an extension of the sanatorium treatment appears to originate in a failure to grapple with the real source of disease. More money may be expended with profit for purposeful research into the possible ultimate sources of this infection. Above all, sanitation and hygiene have by no means attained a state of perfection that permits of our making a halt in our endeavours to clear our cities of pestilence. It is improved sanitation and sanitation alone that can attack the real source of disease—be it typhoid fever or consumption. Sanatoria are but the feeble and half-successful efforts to stem the ever swelling tide of the tuberculous plague. The fountain of plague demands our earnest and energetic investigation and treatment. While this is being realised even in the apparently clean cities of England, what is there to console us in India where the "white plague" is a newly arrived visitor! Indian cities have been proverbially slow to adopt sanitary principles. Madras has seen the twentieth century without an adequate water-supply or drainage, and with no near prospect of seeing the proposed schemes in a state of completion. And sanatoria may rise on the hills in the Presidency long before

THE ANTISEPTIC.

JUNE, 1911.

Statesmen Treating Disease.

Of all the accidents that befall human beings, disease is no doubt the most dreaded. It sharpens the pinches of poverty, and brings in its train a host of miseries, at a time when one can least afford to leave off working for bread. The majority of the poor who carry on a hand-to-mouth living, can scarcely find a margin of means sufficient to be able to stand against the coming rainy day. It is gratifying, therefore, to find that statesmen are directing their attention—their attention that has long rivetted solely on iron-clad navies and imperial frontier extensions—to the worries and miseries encountered in the poor man's household. Germany was not long in recognizing that national business and security had their foundation in the contentment of the nation's working sinews. Mr. Lloyd George's last Budget provisions for the needy British population have come as a blessing to the nation. It is bound to make the lot of the poor a cheerful and a hopeful one, and the State, in whose interests they are directly or indirectly employed, undertakes to make provision for misfortunes beyond their power to avoid. Indeed, when disease is the nightmare of all our lives, when our State offers support against the visitations of that much-dreaded monster, who is there among us that would not feel doubly glad and fit for the discharge of our duties in life?

It is estimated that about 15,000,000 members (men and women) of the British industrial classes will come in for the benefits under the proposed Insurance scheme. Of these beneficiaries each working man has to contribute 4d. a week (the average wages of a man being about 24s. a week). The employer contributes 3d., and the State 2d. From the funds thus collected, medical relief is given to the members through the agency of County Health Committees to be appointed with certain powers. In case of sickness, each member of the society will receive medical attendance, and sanatorium treatment where that is required, as well as benefits fixed at 10 shillings a week for a man for the first three months, and 5 shillings for the next three. Women workers will have 7s. 6d. a week, and a maternity benefit of 30s. When a member falls ill, therefore, he is entrusted to the charge of a competent medical man (who is paid by the society from the funds); and his family in the meanwhile can maintain themselves on the "sick and

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backwards and downwards, through which urine is passed. This structure admits only a probe which when curved in a particular leads into the bladder. There is no aperture representing the vagina. On rectal examination no uterus or ovaries could be felt. The spermatic cords and inguinal canals are normal.

There is a tumour a little larger than a tamarind seed in the right groin. It is slightly tender at the time of examination. The patient says that the tenderness is quite different from that felt when a testicle is pressed between two fingers.

Diagnosis.

Hypospadias of the third degree. It is doubtful what the tumour in the groin may be. It is probably an enlarged lymphatic gland.

A female relation who accompanied the child says that noticed the traces of testicles in the scrotal sacs at the time of the birth. From the manner in which the child passed urine they considered the child to be a girl. They, therefore, gave the child education and dress appropriate to a girl and performed the marriage of the girl at the age of 11 as is generally done in this country.

Treatment.

Redeclaration of the sex and education and dress appropriated to a boy have been advised. No operative treatment is considered to improve the existing condition.