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THE RELATIONSHIP OF RADIOLOGY AND SURGERY.*

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Leeds.

It must, I feel sure, be difficult for the younger generation of physicians and surgeons fully to realize the magnitude and the high value of the help that is now given to us by the work of the radiologist. Each generation inherits the work of its forerunners, and it requires an effort of imagination denied to most of us to picture the conditions of earlier days in which many of our present resources were still undeveloped. None of us, I think, quite appreciated the difficulties against which Lister had to contend in his early investigations until we were suddenly confronted with the nauseating and starting horrors of those heavily infected wounds with which we had to deal in the first few months of the great war. And the lessons we learnt then increased, if that were possible, both the admiration we all felt for the toilsome and honest work that Lister did, and our gratitude for the imperishable heritage which he bequeathed to us.

So it is also with radiology. It requires a considerable effort of memory, and some skill in reconstruction, to recall for ourselves the days when only the note given by a sound in the bladder as it impinged against a stone made certain the diagnosis of calculus. The word "certain" is too emphatic; for I can still vividly remember Marcus Beck telling us in his ward at University College Hospital of the errors in diagnosis that might then arise when the sound struck the spine of the ischium and produced a muffled note, or when a trinket on the watch chain of the surgeon tinkled at the moment the instrument was rotated

* Sent by the Author for publication in this Journal.

in the bladder. Nor can I easily forget the infrequency with which an exploratory operation upon the kidney revealed the presence of the stone whose existence had been confidently predicted, nor the uncertainty and ill success which attended the search for a calculus in the ureter. The change from those days with the hesitation, the guess-work, the bitter and humiliating disappointments, to these days of confidence and precision is almost immeasurable; and it is to the devoted and skilful workers in the fields of radiology that we are grateful for the transformation. It is natural and fitting that this day should be held as a day of remembrance for one of the greatest of the pioneers—Mackenzie Davidson. It will, perhaps be appropriate if, in my role of a physician doomed to the practice of surgery, I endeavour to show, more particularly in connexion with abdominal diseases, in what degree we have taken advantage of the new methods of diagnosis and of treatment which radiology has afforded us.

Diagnosis.

Let me begin with the pharynx and oesophagus, though an evening's entertainment might not unprofitably be devoted to a discussion of the value of radiology in connexion with the disorders, real or assumed, of the hidden portions of the teeth. It is true that diverticula of the pharynx were known long before the days of radiology. The first case was related in a letter from Mr. Ludlow, a surgeon of Bristol, to Dr. William Hunter of Glasgow, and is recorded on page 85 in volume 3 of the *Medical Observations and Enquiries* of 1767. Ludlow speaks of a "preternatural bag" in the pharynx. The figures he gives are exquisite, and are unsurpassed for beauty and accuracy by any later illustrations. The specimen is in the Hunterian Museum at Glasgow to this day, and a recent drawing of it shows that it has changed very little in the last 150 years.

The diagnosis of the condition in its fully developed state is not difficult. Radiology not only makes the diagnosis quite certain, but it gives a quality of precision that could not otherwise be obtained. We learn not only that the preternatural bag is there, but we know where it lies, how large it is, what attachments it has made, and all details that may be helpful to us at the time of operation.

Of diverticula of the oesophagus we knew nothing before the days of *x-ray* examinations except that which was learnt from *post mortem* examinations. These little wayside tracks are not often of clinical importance. When filled with food they press upon and distort the tube from which they spring, and cause an uneasy suspicion as to the presence of cancer, a suspicion that only time allays.

Oesophagus.

Of the condition known as cardiospasm we could, of course, know nothing accurately apart from the examination made by the radiologist. It is true that our museums contain many specimens of "idiopathic dilatation of the oesophagus," but the recognition of this deformity, the knowledge of the size, position, capacity, and occasions of emptying the pouch, the extent of the tube involved, and the position of the barrier, we learn only from the screen examinations. In the first case I saw after I had just learnt of the disease from Professor Mikulicz we had "washed the stomach out" many times, and removed from it large quantities of fermenting, offensive, and disintergrating food that had been long retained. When this little operation was repeated under the control of the x -ray we saw with amazement that the tube never entered the stomach, but lay coiled within the immense cavity formed by dilatation of the oesophagus. We failed completely to pass any bougie into the stomach though careful and repeated attempts were made. A duck-shot tied on to the end of a long piece of silk at last was seen on the screen to enter stomach and to pass along the intestine until it emerged at the anus. When all the length of silk was entangled in the intestines and formed there a fixed point, I threaded bougies over the strand hanging from the mouth and so guided them safely into the stomach. The obstruction was fully dilated, and the patient taught to pass bougies. When she was expert the silk was cut at the mouth and at the anus, and a week later the whole length of it was vomited. Since those early days I have treated many patients, and though examinations with the oesophagoscope are made, we still rely chiefly upon the radiologist for the information which directs our treatment. There is no doubt that most of these cases were formerly regarded as malignant, and gastrostomy was done for them. A patient in the Leeds Infirmary was seen by me twenty years after this operation had been performed by Mr. Ward, on the supposition that a carcinomatous growth obstructed the gullet. An x -ray examination showed the typical appearance of this disease.

The differentiation between "cardiospasm" and carcinoma now presents no difficulties, for the appearance of the oesophagus filled with an opaque medium is quite characteristic in both diseases. The large size of the oesophagus, its tolerance to food, the vigour of the peristaltic waves, which do not move the meal forward, the rounded, blunt end of the shadow which reaches to the diaphragm in cases of cardiospasm, contrast as sharply as possible with the slight distension of the oesophagus, the intolerance to food, the incompleteness of the obstruction, and the narrow tapering of a shadow which is very rarely exactly on a level with the diaphragm, in cases of carcinoma.

Diaphragmatic hernia is a rare disease. Its recognition without the aid of radiology is excessively difficult or perhaps impossible. It so happens that I have had four cases in my charge—two in the time before we used the x ray and two since. Neither of the first two was recognized until the abdomen was opened, and both were discovered with a shock of surprise. The latter two had been recognized by the radiologist; one was on the left side as most cases are; in the other the sac lay in the right side of the chest, and its contents—the stomach and the transverse colon—were easily recognized in the radiograph. I know of only one other similar case; it was operated upon by Sir Hugh Rigby.

Ulcer of the Stomach.

In connexion with gastric disease it is hardly too much to say that we owe almost everything to the radiologist. As we look back upon the history of gastric ulcer in respect of its symptoms, its diagnosis, and its treatment, we must now realize that before the radiologist came to the rescue there was little that could meet with our confident acceptance. I do not doubt that more errors have been made in the diagnosis of gastric ulcer than of any other disorder. Its symptoms are mimicked with so much accuracy by other diseases that it is not only the unwary who are deceived. The radiologist has put all this right, or nearly right, and has, I think, explained the cause of the so remarkable plagiarism by those other diseases which arouse gastric symptoms. It is, however, not only diagnosis that has been at fault, but the treatment that has been based upon it. How can we explain the devotion of physicians to the alkali treatment of gastric ulcer except on the assumption that the diagnoses upon which such methods first were founded were erroneous? For in about 80 per cent. of the proved cases of gastric ulcer the free hydrochloric acid content of the gastric juice is either normal or below normal or absent. And the surgeon is far from guiltless in the matter. He has too often been content to accept the diagnosis of "gastric ulcer," and, basing his treatment upon it, has performed gastro-enterostomy, which, unhappily, he has been led to believe is a panacea for all gastric disorders and a swift and certain cure for gastric ulcer. The accuracy with which a competent radiologist, given time, can make a diagnosis of chronic gastric ulcer which the operation will confirm must in time lead to the abolition of these foolish practices by us all; and radiology will prove the most effective remedial agency for the loose talk and incoherent thought which distinguish so much of the literature and practice of days that are not yet past. May I urge once again that until our knowledge is clarified and our practice established in reason, no diagnosis of gastric ulcer based upon clinical evidence alone be accepted as a warrant for treatment? A chronic gastric ulcer,

unlike the Emperor's new clothes, is a real thing. It is to be seen, and during operation can be handled, exposed, and demonstrated. If it is there at all, it is there for all to see. No gifts of vision are conferred upon the surgeon which are denied to the onlooker. If the surgeon says an ulcer is there any competent witness can test the truth of his statement. And the accuracy of the radiologist in the diagnosis of this disease nearly approaches that of the surgeon who inspects and handles the stomach. The radiological diagnosis of gastric ulcer is not, however, constant in its accuracy. The greatest difficulties are met with when the ulcers are small, lie on the lesser curvature, are close to the cardiac orifice, and veer towards the posterior surface. The sheltered position of the part of the stomach which harbours them, the overlying liver, the barrier made by the wall of the thorax, and the impossibility of direct palpation of the stomach here, all are hindrances to the exact methods applicable to the exposed gastric area. All these difficulties are, however, in some degree surmounted if the dark meal is carefully watched as it enters the stomach, if the patient is placed in the Trendelenburg position, and if convergence of the folds of the gastric mucosa to a definite point is observed. There are times when an ulcer may be demonstrated if the filled stomach is pressed down from the epigastrium by a pad of wool, more and more increased in size; the stomach is thus rotated a little on its long axis, and an oblique or transverse view may then disclose an ulcer crater. The occasions of error in diagnosis are, however, so few that radiology remains easily supreme above all other methods in the accuracy of the diagnosis made with its help.

If the diagnosis of gastric ulcer is made by no matter whom, let us agree that it is not to be acted upon by the therapist with drugs or weapons unless the radiologist confirms it. It is admittedly true that this expert may sometimes fail to see an ulcer which is undoubtedly present, especially if he is hurried in his examination by the importunity of the physician or the impatience of the sufferer himself. But, given a good chance, his errors will be few far fewer than those of any other investigator. And it must be conceded by us all that the value of any treatment—dietetic, medicinal, or operative—cannot be gauged unless we know the precise condition for which the treatment has been prescribed. At present, with the best will in the world, I am unable to learn anything which satisfies my intelligence as to the worth of any of the methods of medical treatment in cases of gastric ulcer. And I am not often without the opportunity of seeing lamentable example of mischievous and meddling surgery practised upon those who were unmistakably arraigned as the victims of gastric ulcer in need of surgery. In all parts of the world operations are being practised by those whose natural gifts may perhaps warrant their ambitions to be sur-

geons, but whose apprenticeship to the most superb and most difficult of all the arts has not been served with that devotion and surrender which alone equip a man for this office. I am amazed at the ready acceptance by patients of the eager ministrations of incompetent operators when adequate skill and experience are at their command. The frequency of secondary operations when the first, being needless, yet produced effects that must now be undone, and of skimpy operations for carcinoma, say of the breast, which invite a quick new growth of cancer cells distributed over the exiguous wound, are a reproach to surgical work.

I think that the radiologist has done much to explain the reasons for the so frequent inaccuracy of the diagnosis of gastric ulcer. When we inquire as to the conditions which cause the symptoms of this disease, we who deal with the living are quick to admit that it is not only the presence of an open ulcer, with its crater of varying depths, that is the responsible and immediate agent; for it is a very common experience to find an open ulcer when the symptoms are in temporary abeyance, the patient enjoying one of the "intervals" so characteristic of the disease. I believe that a state of active increase of the ulcer is essential to the production of symptoms: when activity dies down and the ulcer makes an endeavour to heal all is quiet. The enlarging ulcer sets up a spasm in the stomach—the "incisura" of the radiologist. The "notch" on the greater curvature, opposite, or about exactly opposite, the "niche" on the lesser curvature, is sometimes so deep that it seems to have the stomach into two parts. Watched attentively for as long a period as is safe, and examined from time to time, it appears unchanged. The conclusion at first was irresistible that an hour-glass stomach existed. Yet when an operation was performed the spasm had vanished. The cause of the symptoms of an ulcer seems clearly to lie in this spasm. The pain is doubtless due, in part, to the distension of the zone lying on the cardiac side of this spasm.

The occurrence of spasm is not, however, restricted to cases of gastric ulcer. There is a reflex spasm which in many of its qualities so closely resembles the direct spasm that in haste a false conclusion as to the presence of an ulcer may be drawn. The reflex spasm, even when it is as deep as the direct spasm, is rarely so constant, or so immobile; it is apt to be shallow, fugitive, changing from one part of the stomach to another, and at each part persuading one that here, at least, is an ulcer. Such a spasm may be excited by conditions so diverse as cholecystitis, tuberculous disease of the intestine or caecum, chronic appendicitis, and certain conditions of the central nervous system. No gastric ulcer, of course, exists without infection; infection may be present, too, in the pyloric part of the stomach when its primary source lies elsewhere. It is long since I

described the "pyloric blush" of chronic appendicitis, and Braithwaite's work¹ in this connexion is full of interest. If, therefore, these two conditions, spasm and infection, are present both in the true and in the apparent disease of the stomach, there is little wonder that the symptoms aroused by them should often lead even the alert and earnest diagnostician astray. The only competent authority to distinguish before operation between the spurious and the true is the radiologist, and, as I have before ventured to claim, his work has pride of place among the methods of diagnosis in all forms of gastric disease.

It is not only in the diagnosis of gastric ulcer that our resources have been so greatly augmented, but in the cognition of its occasional complications. Many years ago I laboured hard to discover, and in several papers elaborately described, the various signs which permitted the hopeful recognition of an hourglass stomach. The signs were many, the labour to elicit them protracted, the judgement difficult and not free from faults. Now the radiologist will tell us every detail that is relevant; not only is the diagnosis indisputable, but the site of the constriction, the size of the two complements of the stomach, the speed with which one or other will empty, the degree of adhesion if any—all, and even more than these, are stated with unequivocal accuracy.

Cancer of the Stomach.

We shall all, I do not doubt, be prepared to concede our inability to diagnose cases of carcinoma of the stomach in an early stage. Of gastric carcinoma there are, speaking roughly, two great groups. In the one the patient has suffered for years at intervals from mild or severe forms of gastric discomfort. Finally, one attack, at first very like all the others proves rebellious. Relief is not given by the remedies which hitherto have proved so easily successful. At the operation an ulcer, transformed in part to carcinoma, is found. In the second group are the cases I refer to as "the bolt from the blue type." The patient has perhaps been notorious for vigorous gastric health: he scorns the suggestion that he may perhaps have been a little dyspeptic. His denial of former ill health is disdainful to the point of arrogance. Suddenly he becomes ill, and perhaps the illness is ushered in by haematemesis of great severity. He loses zest for many things—food, his former activities of work or play; he loses weight, becomes anaemic, and when he is examined a lump is felt in the epigastrium. It is a melancholy but indisputable truth that despite the activities of a small body of surgeons in this country, carcinoma of the stomach is almost always an incurable and fatal disorder. I should doubt if there are a hundred patients in the whole country who are alive and well five years after operation for the second type of carcinoma

to which I have just referred. The reason for this lamentable condition of affairs lies chiefly in our incapacity, by any clinical means, to make a diagnosis in the early stage. As a profession we are not, however, blameless. We have not the courage of our experience. For when a patient over 45 begins with these insidious failures of health our tendency is to procrastinate, when we should not delay a moment. Lives are lost in part through ignorance, in part through timidity. The radiologist is now our strength. He is able, given time, to make a diagnosis of filling defects, to recognize interrupted waves of motion, of a break in peristalsis on the affected curvature, whilst the movement on the normal curvature is unchecked, of deflections of the current of the opaque meal, long before we could be in the least degree confident, by any other means at our command, of the presence of a growth. To ensure a success in treatment greater than that most meagre form we now command, two changes are essential: all patients about whom we have a doubt should be sent forthwith to the radiologist; and the *x*-ray examination should not be hurried.

Diverticula.

What should we know of diverticula of the duodenum but for the radiologist? I have carefully searched the literature of this subject, and though the condition was first described in 1710 by Chomel, no case had been diagnosed during the lifetime of a patient before 1912. Yet J. T. Case, in a study of 6,847 consecutive patients upon whom a radiological examination of the stomach and duodenum was made, found no fewer than 85 cases of diverticulosis. Not many of the patients who possess these little wayside tracks from the duodenum suffer from them; their removal is therefore rarely necessary. But regard should be paid to them in all operations in which a diagnosis of duodenal ulcer, or of cholelithiasis, is not supported by the conditions disclosed at an operation, for the retention of foodstuffs in these cavities, or its fermentation, may cause symptoms which are apt to be ascribed to other lesions, and when these are not found on inspection the operation may, in ignorance of this condition, be abandoned as a failure.

Of diverticula of the jejunum occurring during life nothing could be known apart from their demonstration by *x*-ray examination. The cases are few in number, and the little pockets do not often cause much harm. This is all to the good; for when present they are apt to affect so great a length of intestines as to make removal of the affected segment a matter of difficulty, or even impossible. The best example that has fallen within my knowledge occurred in the practice of my colleague Mr. Braithwaite, the radiological examination and the diagnosis being made by Dr. Rowden.

Colon.

The subject of radiology in relation to diseases of the colon has so recently been discussed in London that I need say little concerning it to-day. When I operated upon the first case recognized as diverticulitis in this country on April 2nd, 1906, so slight was our knowledge of the disease that a diagnosis during the life of the patient had never been made. Many of the specimens on our museum shelves bearing the label "carcinoma" were examples of the massive inflammatory thickening round these little crypts and the fact that the majority of the fistulous tracks from the colon to the bladder were not due to carcinoma was generally unrecognized. The diagnosis of diverticulosis is now made with complete confidence by the radiologist and by comparison of one radiograph with another taken some months later we are able to judge of the progress of the disease and to come to a decision as to whether operative treatment is likely to be necessary.

I have a number of patients suffering from this disease who are kept in good health, and are sheltered from the attentions of the surgeon, by medical treatment. This ensures a daily emptying of the intestine, and include an orgy of aperients on the Saturday afternoons and Sundays which are given over, religiously, to the observance of the ritual of free and frequent evacuation. I find that operative treatment in the chronic form of this disease is rarely necessary.

The diagnosis of carcinoma of the large intestine may present such difficulties to the radiologist that great care is needed to avoid error. The opaque meal and the opaque enema both have their uses, but I find far greater help from the latter. Owing to the loading of the colon, and the tenacity with which faecal masses will adhere to the mucous membrane, some days may have to be spent in the administration of aperients, and in lavage of the colon before it is empty. A small hard adherent mass of faecal material will show the same filling defect as a growth, and imprisoned gas will prevent the entry of the opaque material. Spasm of the colon, especially in heavy smokers, may suggest an organic stricture, and the overlapping of one part of the bowel by another may cause a deepened shadow or prevent a free entry of the barium mixture. I have been misled both by negative and by positive diagnosis made by the radiologist, but I have been far more often aided than hindered especially if a day-to-day examination of the faeces for blood, when the diet is free from haemoglobin, has been made. By collating these two methods of examination, radiological and haematological, with the clinical history we are able to recognize malignant disease of the colon before a tumour can be felt, and before obstruction has developed; and having regard to the fact that the colon lends

itself to removal better than most parts of the body, and that recurrence after early operation is rare, this is a great achievement.

Gall Bladder.

The recognition of diseases of the gall bladder is now receiving help from the radiologist. In making a diagnosis we are all accustomed to speak of cholelithiasis—to say that a patient is suffering from “gall stones.” But I believe that we shall be able before very long to look upon gall stones in much the same way as we now regard haemorrhage from a duodenal ulcer, or its perforation—that is as a quite unnecessary complication. Gall stones are the expression of tedious events in a terminal stage. Despite my friend Rovsing of Copenhagen, I have unchanged belief in the view that gall stones are the consequence of infections which reach the gall bladder from one or more of several sources. Our business is to search out the inaugural symptoms, the symptoms of infection of the gall bladder, and to use all the means that the radiologist—employing, too, the method of Graham—can bring to our aid. I look forward hopefully and not without confidence to the day when we shall regard cholelithiasis as a preventable disorder. It is true that the clinical diagnosis nowadays is not often at fault; we are able to predict the presence and the position of stones in the gall bladder or the ducts with a large measure of certainty. Even the pre-calculous stage of this disorder is becoming day by day easier to discover. Though we can clearly see the gall stones on the radiograph in about one-third of the total number of cases in which they are shown by operation to be present, they are not often seen where they are not confidently expected. The indirect signs of cholecystitis are of more interest than the shadow of stones, for they display the changes which the disease has brought about in neighbouring organs by the presence of an enlarged gall bladder, or by the traction exerted by a shrunken gall bladder which has become adherent to them. The advantages of Graham’s method would seem to lie chiefly in the opportunities of the gall bladder, and into the functions of the liver. We do not yet know in what circumstances and at what rate the gall bladder fills and empties, and we have still much to learn of the secretory activities of liver. The absence of any shadow after the Graham injection has been made is indicative of a closure of the cystic duct by a stone or by a stricture. But a mistake in the recognition of these two conditions is almost unknown. The danger attaching to Graham’s present method appears to be very slight, and doubtless, with enlarging experience will disappear. The salt used by Graham is useless as a test for hepatic efficiency owing to the fact that its colour is destroyed in serum.

The *x*-ray examination of the gall bladder after its removal and of the stones which it contained shows that the smaller stones almost always contain nothing but cholesterol. A very few have a nucleus, or an ingredient of calcium. It is only after a certain size has been reached, and a chronic irritation of the gall bladder has been incessantly at work, that calcium in little spots or as a thin film is laid down on the surface of the stone.

The conclusion I draw from the radiological work done in connexion with cholelithiasis is that it enables a diagnosis to be made which would, in rare instances, perhaps be in doubt; that it discovers the existence of associated lesions in neighbouring viscera; and chiefly that it is a powerful instrument of research in enabling us to discover the composition of stones, and therefore to learn something of the processes at work in their formation, and by Graham's method to add something to our very imperfect knowledge of the functions of the gall bladder and of the liver. In other conditions the help of the radiologist to the clinician is still more invaluable. In diseases of the kidney and ureter, in the discovery of stone within the bladder or of diverticula protruding from it, we are even in danger of allowing our clinical diagnosis to ignore the history, and to base itself confidently upon radiology alone. No doubt others are as weak as I am. When a patient complains of pain in the loins I am tempted to ask first what the radiologist says, and to accept his word as law. Indeed, he is so constantly right when the clinician alone would be so often in doubt that here too he is both guide and governor. The use of the "bonnet" which so greatly helped us in the removal of projectiles during the war may well be remembered when the kidney, delivered from the wound, is being searched for stones. And here, too, research work upon the normal and pathological anatomy of the kidney and ureter, after opaque injections have been made, and upon the chemical constitution of stones, has added notably to our knowledge.

One of the most delightful uses to which radiology has been put is that which Sicard introduced for the localization and discovery of tumours of the spinal cord. My knowledge of this comes from Mr. Percy Sargent. I confess that I felt a thrill of pleasure when I first learnt of this neat and ingenious method.

Limitations.

One very important point remains. All the methods, other than the application of our own senses directly to the patient which we so willingly use in the practice of surgery, are after all ancillary. They strengthen our clinical armoury by adding weapons of varied and sometimes, as in the case of radiology, of immense value. But they all supplement our clinical resources; they do not, and cannot, supplant them. In regard to

gastric ulcer I cheerfully acknowledge that the radiologist is, on the whole, a more competent and a more accurate diagnostician than I am. He has pride of place. But I find an occasional case when, being confident of the existence of an ulcer, I learn that the radiologist doubts, or even denies, the diagnosis which nevertheless an operation confirms. I accept with gratitude a positive diagnosis made by the radiologist; but if my clinical sense urges me, after the rebuff of a negative report from the *x*-ray department, to hold to my diagnosis, I may find my tenacity rewarded. In a long series of cases the radiologist will, however, prove to be right more often than the clinician.

When the clinical diagnosis of an ulcer, or of a diseased gall bladder, or of an enteric growth, is not confirmed by the *x*-ray report, what is to be done? The whole case must once again be reviewed. In cases of gastric ulcer I hesitate to go contrary to the report of the radiologist, but sometimes I am driven by my own confidence to do so. In cases of duodenal ulcer I prefer my own opinion, linked with that of the chemist, to that of the radiologist. If he gives a negative opinion and I am persuaded of the accuracy of my own, I am prepared to act upon it; and I find I am more often right than he is. In gall-bladder disease the clinician, if unsupported by the radiologist, should be prepared to act alone. I could quote many instances where patients, including medical men, have heard the diagnosis of cholecystitis from the clinician, and on learning that it lacks confirmation by the radiologist have been lulled into contentment and a dangerous inactivity, only to be roused by a very formidable catastrophe. If the careful clinician has made a diagnosis of cholecystitis or cholelithiasis, a report from the radiologist that gives it no countenance should be disregarded. And so it is with suspected malignant conditions of the large intestine. Though a radiological examination often affords the greatest help when confirmed with the clinical history, and with the daily search for occult blood, the earliest and the most certain diagnosis of these diseases, after all, is made when the barrier of the abdominal wall is lifted away.

Therapy.

The treatment of carcinoma wherever it occurs is a disheartening business. The recognition by patients and by medical men of the earlier conditions of malignant disease, even in parts that can be seen or are easily accessible to examination, is unhappily infrequent. It seems almost incredible that patients should allow ulceration of the tongue, for example, to progress to a stage in which remedies are almost hopeless. The diagnosis presents no difficulties, and inspection of the tongue in a mirror ought surely to awaken anxiety. And at every meal time discomforts must be felt or limitations of diet be necessary. When

a lump appears in the breast of a woman her natural timidity makes her, perhaps, unwilling to submit herself to examination. And when the tumour is plainly felt by a medical man no little time is lost in discussions as to its nature. Nothing but the microscope can settle the diagnosis in difficult case; to wait for the appearance of those signs which convince the surgeon that the tumour is malignant is to give time for the disease to be disseminated. A review of many cases over a period of twenty years results in this interesting law: "In tumours of the breasts of women over 40 years of age, not less than 80 per cent. are malignant, no matter what the physical signs of the tumour may be." Diagnosis, therefore, is largely a matter of the age of the patient. It is a far more reliable guide than any other. Many cases follow upon chronic inflammatory lesions—in the mouth, in the breast, in the stomach, upon the skin, in the colon. Cancer, therefore, is often a preventable disorder. And in its early stages in most organs of the body it is a curable disorder. To the surgeon two facts about cancer appear indisputable: that it comes as a result of long-continued trivial irritation, and that it begins as a purely local disorder, and can in that stage be wholly eradicated.

It is pitiable to find so large a number of cases which are inoperable, or which, having been treated by operation, suffer recurrence. To deal with these cases many remedies have been sought. Radium has proved its value in some of them, and the application of x rays was soon included among our methods. Twenty years ago or more I sent all my breast cases, and all cases in which glands had been removed from the neck after excision of the tongue, to the radiologist. Of the effects produced by the methods of radiology in such cases it was difficult to judge. If the patient remained free from recurrence, one was unable justly to apportion credit between the radiologist and the surgeon; if the disease returned, both had proved powerless. I came tardily and reluctantly to the conclusion then that on the whole more harm than good was done, and I abandoned the method entirely.

When the deep x -ray methods were introduced I felt renewed hope, and with the most skilful and enthusiastic co-operation of Dr. Cooper I have submitted a very large number of patients to his treatment. An exposure to the deep x ray may be made (*a*) before operation; (*b*) during operation; (*c*) after operation; (*d*) when operation is impossible.

(*a*) *Before Operation.*

In my own practice this is not often adopted in cases of cancer; for I feel that if a growth is to be removed it may be possible to eradicate it to-day and impossible to-morrow, and I

never waste one single day. But in cases of carcinoma of the breast, when the activity of the growth and the rate of its extension seem almost inflammatory, it may be worth while to apply the rays, not so much to the growth as to the area around it, in the hope that the cells in lymphatic vessels, which might be set free to implant themselves upon the surface of a wound, may be destroyed.

In cases of carcinoma of the rectum, or of the uterus, with much induration and thickening around the tumour, and when adhesions appear to be present, the rays may cause a change so great as to make one doubt the truth of the earlier observations. The growth shrinks, loses its induration and fixity, and from appearing irremovable seems now to offer no difficulty. In one case in which, in an enfeebled old woman, much distressed by a teasing diarrhoea, I had performed colotomy, the growth entirely disappeared. I had removed a gland at the time of operation, and the diagnosis of carcinoma was not in doubt. No doubt the growth will reappear, but its complete removal is an evidence of the great effect which the rays are able to produce. In all cases of splenic enlargement one or more exposures to x rays are given. The reduction in the bulk of the spleen is almost incredible: from filling the whole abdomen the organ shrinks until a lump the size of a golf ball is felt below the costal margin. Then the spleen may be removed with a safety and with such ease as could not be claimed for any operation upon it in its original state.

(b) During Operation.

In cases of Crile's operation upon the glands of the neck, and in cases of carcinoma of the breast, I think we might more often expose the entire area of operation to the rays before we close the wound. I have done this in a number of cases, and though it is impossible accurately to gauge its value, on theoretical grounds it certainly appears a very desirable procedure. I have long felt disheartened by our inability to perform more often than we do radical operations for carcinoma of the stomach. I therefore determined to enlist the help of the radiologist. The application of x -rays to the surface of the abdomen, though it may rarely do good in these cases, does sometimes appear to do harm. I tried a new method. While the abdomen was opened and the stomach exposed I moved the patient to the x -ray room, and there, bringing the growth as far as possible into a widely opened wound covered by a single layer of macintosh gauze, I applied the lamp directly to the stomach for a period of forty minutes. The abdomen was closed. Seven weeks later in one case, nine weeks later in another, I reopened the abdomen and found the growths so changed and shrunken that I was able to remove them, with all their attached glands.

Two operations of gastrectomy in this way were performed in 1923, and to-day both patients are alive and well. One has gained 33 lb. in weight, another 9 lb. In both two transfusions of blood were given—one at the time of the x -ray exposure and one before the removal of the stomach was undertaken.

(c) After Operation.

As soon as the wound is healed after removal of the breast a course of treatment by the radiologist is now advised in all cases. The hope we entertain is that any cancer cells in the neighbourhood of the wound will be killed, and that recurrence may be so prevented. Of the prophylactic value of the rays we cannot speak with any certainty. A local recurrence after an operation for mammary carcinoma is in any event so rare that a very long series of cases would be necessary to establish the value of post-operative radiation. But, again, on theoretical grounds the treatment appears so rational that I should not feel content to omit it.

It is perhaps desirable to urge once again the necessity for an x -ray examination of the chest and neck before any operation for carcinoma of the breast is undertaken. The search for metastatic deposits in outlying regions should invariably be made before removal of the primary source is undertaken. When recrudescence of the growth has taken place in the neighbourhood of the wound, or when glands appear in the neck, radiation will often produce the most remarkable results. I have known multiple nodules scattered widely over the chest wall to disappear completely, and to remain absent until the patient's death in consequence of visceral deposits; and glands grossly enlarged and causing pain in the neck and head are diminished in size or caused to vanish, and the lancinating pains soon disappear.

(d) Inoperable Cases.

A visit to the radiological department engaged in the treatment of these cases is a depressing experience. Cases for which the surgeon can do nothing, and cases for which he has done all he can, are sent to this last resort. All the surgical outcasts find refuge here. If radiology could do nothing for them no blame could attach to it, for more unpromising derelict material it would be impossible to find. Yet something is wrought upon these cases that at times approaches the miraculous. Growths shrink and wither away, and foul and extensive ulcers make vigorous attempts to heal, and haemorrhage from excavating caverns ceases entirely. Growths of the thyroid seem to melt away, and growth of the parotid, hard, fixed, and painful, may disappear very quickly. But the return is not long delayed. The most dramatic result I have ever seen was

in connexion with a carcinoma of the thyroid as large as the patient's head, which disappeared almost entirely within a month, only to return with almost equal haste and quickly to prove fatal. There are, of course, many disappointments, and at present one is not able confidently to reckon upon any improvement in the individual case; but the fight for each one is always worth while.

The effects produced upon the patient are sometimes apt to be serious unless great care is taken. The red cells are so diminished in number that great enfeeblement results. I have many times given one or two transfusions of blood in patients who have to submit to x-ray treatment, and hypodermic injections of iron are administered regularly, and most patients are given artificial sunlight baths.

The gifts of radiology to medicine and to surgery have been most lavishly bestowed. When we consider that this science is a newcomer into the fields of diagnosis, of therapy, and of research, the results obtained in so short a time are surely matters for which humanity at large may feel profoundly thankful.

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THE PRESENT POSITION OF MALARIA. *

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Malaria is probably the oldest disease recognised in historical or medical annals. In a recent article by Gemayel¹ in the "*Presse Medicale*", the writer quotes thus from the Book of Deuteronomy "The Lord shall smite thee with a consumption and with a fever, and with an inflammation, and with an intense burning". This clinical picture is believed to refer to Malaria, and shows that the inhabitants of Syria and Palestine were acquainted with the disease over 4000 years ago. At an equally early period, according to Faust², Clinical Malaria was recognised in China, for in the Neiching, 2600 B.C., the disease is described as the loss of harmony between the hot and the cold principles. At the zenith of Grecian civilisation, about 500 B.C., Hippocrates recognised the periodicity of malarial fevers, and Dr. Bass³ in an address to the Southern Medical Association of America argued that the cultures of Greece, Rome, Ceylon and perhaps Egypt all crumbled on account of the paralysing influence of malaria.

In taking up a subject of such antiquity, I make no claims on the score of originality. My object is to summarise the problems which malaria presents to the modern physician, to promote discussion amongst men who have an everyday acquaintance with the disease and to gather the opinions of those who have long experience of its treatment.

In this Society, I need not lay emphasis on the fact that malaria is a problem of the first importance to China, but unfortunately we have practically no statistics to bring home that truth to the general public. The earliest records of a scientific nature were published in the Annual Reports of the Chinese Maritime Customs commencing in 1871, and as these were simply records of various epidemics of clinical malaria in Peking and the Treaty Ports, they left no foundation for statistics. About 20 years ago, Drs. Jeffreys and Maxwell tried to collect details of the incidence of the disease in the various provinces from the members of the China Medical Missionary Association, and although the data gathered were quite inadequate for statistical purposes, they were able to state in their published work⁴ that "Malaria still remains the commonest of

* Read at a meeting of the Hong Kong Chinese Medical Association, 17th June, 1927.

diseases in China and the most serious cause of invalidism among Europeans in the East".

Two years ago, Dr. Faust², of the Peking Union Medical College instituted an inquiry into the prevalence of malaria in China and while his records are still fragmentary he has been able to indicate the vast toll, in lives and in ill-health, which this disease takes annually from the Chinese population. From a total absence of infection in the North-west province to a light incidence in Manchuria and the North-east maritime districts, the disease becomes increasingly prevalent along the Yangtse Valley and down the coast until it reaches almost saturation point in Hainan, Kwangtung, and along the borders of Indo-China and Burmah. From a scrutiny of the Medical Reports of the Maritime Customs Service and all the hospital reports available, Faust is struck with the fact that there has been no material change in the amount or distribution of malaria as a whole during the last fifty years. There has never been a systematic malarial survey of this Colony and we have no statistics of any value for estimating the prevalence of the disease in our midst. In the city of Victoria, whatever the condition may have been in the past, malaria is not now indigenous, but in the villages scattered over the island and in the New Territories, I believe, from observations made in the Government Civil Hospital, that at least 75% of the population have at one time or another suffered from malaria. Here is surely incentive enough for tropical physicians to explore all possible channels of research and to take stock of their armamentarium for dealing with this paramount disease. I wish to indicate some of the points that call for elucidation.

Etiology.

With regard to etiology, there can be no doubt as to the plasmodial origin of this fever. The parasite of Benign Tertian Malaria, *Plasmodium vivax*, was observed by Laveran in 1881 but it was not recognised by him as a distinct species. In 1886, Golgi differentiated the parasites of Tertian and Quartan Malaria and named the latter *Plasmodium Malariae*. Laveran had also observed certain crescentic forms of parasites which he did not recognise as the causal agents of Malignant or Subtertian Malaria, and it was left to Welch in 1897 to announce the specific name of *Plasmodium falciparum*. Since that date, other parasites have been described, such as the *Plasmodium vivax minuta* of Emin in 1914 which he found in the blood of pilgrims crossing the Red Sea, and the *Plasmodium tenue* of Stephens, also in 1914, which was seen by him in a blood-film sent to him from India. But Wenyon⁵ is of opinion that there is no evidence to indicate that the forms on which they are based are not merely abnormal individuals of the three well-established species, *P. vivax*, *P. malariae* and *P. falciparum*.

On the other hand there were, and perhaps still are, a few observers who believe that the three malarial parasites belong to one species and that they change from one form to another under conditions which are not yet understood. For example Grassi, the eminent Italian malariologist, who took a large part in working out the life cycles of the various Plasmodia, announced his recantation in 1919 and gave it out as his opinion that *P. falciparum* which causes malignant malaria in the autumn becomes the *P. vivax* in spring and brings on relapses of benign tertian. Laveran also maintained to the end of his life that the three parasites were different forms of one and the same species.

Within the last few years experimental evidence has been accumulating against the theory of one species. Thus Mühlens and Kirschbaum⁶ have been inoculating malaria into patients suffering from General Paralysis of the Insane and Tabes Dorsalis. Up till 1924 they had passed a strain of *P. vivax* in series through 40 cases and the parasite had maintained its characters unaltered. In their earlier experiments the same workers had also passed *P. falciparum* and *P. malariae* through several patients and these also showed no tendency to alter their specific character.

Last year A. R. Grant⁷ reported that he had been inoculating a strain of *P. vivax* through a series of passages for nearly four years and there was no alteration in the morphology or the virulence of the parasite. Numerous other workers have confirmed these results and against such evidence the theory of the unicity of the species has completely broken down.

Mosquitoes.

With regard to the vector of malaria all recent research only seems to emphasise our ignorance of the biology of the essential factor in the propagation of malaria. So far as we know the genus *Anopheles* contains all the species which are capable of carrying malaria but within that genus there are many species which apparently do not act as carriers. Again under varying conditions anophelens which are potential carriers seem to be negligible in the transmission of the parasites. For example, Bentley collected about 800 specimens of *A. rossi* and a similar number of *A. stephensi* from certain houses in Bombay. Both of these species are known to be potential malarial carriers, but on careful dissection he found no parasites amongst the *A. rossi* while the *A. stephensi* showed oocysts in the mid-gut in 10% of the number.

During an epidemic in a mountain station in Brazil, Nelson Davis⁸ found that the predominant mosquito was *A. lutzi* which is a known vector, but on dissecting 400 stomachs of this species

he found only one oocyst. The infection he believed was carried by *A. argyrotarsis* which was comparatively rare in the district.

On a rubber estate in Java, Bosch⁹ investigated an outbreak of malaria recently. The only infected mosquitoes belonged to the species *A. kochi* and out of 268 dissections of this species he found 3.7% with the developing plasmodia.

In Hong Kong and the neighbourhood there are at least eight species of Anophelens but there are only three worthy of consideration as malaria carriers, viz. — *A. maculatus*, *A. hyrcanus* var. *sinensis*, and *A. minimus*; the others are too rare to be of any account. Although *A. maculatus* is the predominant mosquito there is a general idea amongst the profession that *A. sinensis* is the chief carrier, but there has been no attempt at systematic dissection in this area and the charge against *A. sinensis* is not proven. The habitat and the conditions favourable to mosquito life are slightly different for all three species, and it is quite possible that the local sanitary department is expending a good deal of labour on the destruction of a species which is comparatively harmless. The dissection of 1000 Anopheles collected locally would clear up an important problem and the authorities would then be in a position to concentrate on the species incriminated.

Since the only solution of the problem of malaria seems to be the annihilation of the carrier, are we making any headway in our methods of destroying the mosquito? The discoveries of Manson, Grassi and Ross were the signal for a great outburst of sanitary activity in which the doctor sought the help of the entomologist, the chemist, the biologist, and the engineer. The methods of attacking mosquitoes which have met with any degree of success can be classified under three heads.—

1. Destruction of the breeding-places, such as by drainage and filling in swamps, training streams. etc.
2. Destruction of the larvae by oiling, by chemicals, and by larvicidal fish.
3. By destruction of all kinds of shelter for mosquitoes—cutting down trees, shrubs, and weeds.

In certain circumscribed areas these methods have been successful in direct proportion to the amount of labour applied and the enthusiasm of the medical officer in charge of the work, but the expense is recurrent and in many communities it is prohibitive. What we are in search of is a means of dealing with mosquitoes far more effective than at present exists. Lately there has been some investigation with respect to a fourth method of destroying the carriers, viz, the biological

method. In 1911, Dr. Gray¹⁰ expressed the view that "the paddy-fields of the rice growing districts form the most suitable breeding grounds that could be devised. Wherever rice is grown in China, there is malaria most prevalent". But have you ever found anopheline larvae in paddy-fields? You will find them sometimes in the irrigation channels or in seepage swamps but seldom in the paddy-fields themselves. Ten years ago Malcolm Watson¹¹ of Malaya pointed out the fact that certain rice-growing districts were free from malaria and suggested that the composition of the water on the cultivated areas interfered with the development of certain anopheline larvae. In a field of growing rice you often find the water covered with a film of blue-green algae and perhaps this has slightly altered the reaction so as to render the water uninhabitable to the larvae. The prophet Mohammed noticed that those who used dark water, that is, streams fed by springs, suffered much from malaria while those whose water-supply was white, that is carrying white sand or fine clay in suspension, did not suffer and so he forbade the use of dark water.

In a recent report on the Anophelines of Mauritius, Malcolm MacGregor¹² states that the degree of alkalinity or acidity of a water has a profound influence on the development of mosquito larvae. Where the water had a hydrogen-ion concentration of 7.4 or under, that is where the water was neutral or acid, no anopheline larvae were found; but where the water had a P value of 8 or over, that is a distinctly alkaline reaction, the larvae were found developing in abundance. It is possible therefore that in our own district the reaction of the water in the paddy-fields may be rendered slightly acid either by the blue-green algae or by the growing rice roots, and so become inimical to anopheline larvae. To alter, ever so slightly, the composition of the waters which flow down our nullahs would seem a formidable task, but the idea is attractive and would provide a field for a most useful piece of research. The biological method of destroying mosquitoes is only in its infancy and gives promise of success where other means are impracticable.

With regard to the destruction of adult mosquitoes, an interesting article by Colonel James¹³ last year throws new light on the subject. He had carried out a long series of feeding experiments in England in order to supply mosquitoes for infecting cases of General Paralysis of the Insane with malaria. Batches of mosquitoes were fed on patients who had large numbers of *Plasmodium vivax* in their blood, but a high proportion of the mosquitoes failed to become infected and a considerable number died before the parasites became fully developed. Once infected however they are capable of passing on the malarial infection to an astonishing number of patients. Several of his mosquitoes, gifted with long life, had infected as

many as forty patients and were still found carrying malarial sporozoites in their salivary glands. James therefore regards the great majority of mosquitoes living out-of-doors as comparatively harmless, and the few infected mosquitoes living inside human dwellings and repeatedly biting the inhabitants as the real source of danger. On that ground he strongly recommends the destruction of the adult mosquitoes inside the houses as a far more important prophylactic measure than the destruction of the larvae in their breeding-places. The fly-swotter should now take the place of the kerosene can.

Clinical Aspects.

The symptomatology of malaria is comparable in some ways to Cleopatra for age cannot wither nor custom stale its infinite variety. It is unnecessary to labour that pleomorphism in this Association, but there is one type which has received some notice in recent literature and which is occasionally seen in Hong Kong. The best name for this variety seems to be Algid Malaria. The symptoms are those of extreme collapse with low temperature, rapid feeble pulse, a scaphoid abdomen, a tendency to diarrhoea sometimes with blood in the stools and a muttering delirium passing quickly to a fatal coma. The blood usually shows parasites of malignant malaria. The following is a quotation from a recent article by Gage¹⁴ who studied several cases in Central America: "If a patient from a malarial district presents himself for treatment with a low or subnormal temperature, profound prostration, cold, clammy skin, anxious expression with sunken eyes, with or without abdominal pain and rigidity, and with no evidence of severe trauma nor acute intra-abdominal disease, the attendant should not wait for a positive blood but at once make a tentative diagnosis of Algid Malaria and begin treatment. If all medication is withheld until a positive blood is reported, the parasites will probably be found only at autopsy if at all". In all the cases reported, *P. falciparum* was found in the blood.

A recent case of Algid Malaria in the Government Civil Hospital had, in addition to the symptoms of shock, a severe and persistent hiccough. Immediately on admission his blood film was examined and showed numerous subtertian parasites and within an hour he was given 10 gr. of Quinine Hydrochloride intramuscularly with Strychnine hypodermically. The hiccough lasted for over 24 hours but the man recovered.

Treatment.

In his article on the Treatment of Malaria, Colonel James¹⁵ stated that "no drug has yet been found that has the same specific action on the malaria parasites as quinine. But unfortunately the cure of an attack is seldom or never

accompanied by complete eradication of the parasite, and we have to admit that, up to the present time, quinine treatment, in whatever manner it has been carried out, has not fulfilled the hope that it would be a *therapeutia magna sterilisans*". Although rather pessimistic, that view has been endorsed by many physicians of experience and in the last decade there has been an eager and constant search for some drug that will prove more effective than quinine. Perhaps the most favoured line of experiment has been with preparations of Arsenic such as Novarsenobenzol, Stovarsol, and A.-Malairin.

N. A. B. came into vogue towards the end of the War and excellent results were reported chiefly from the Macedonian front, but later experience of the drug has not maintained its reputation. The staff of the Liverpool School of Tropical Medicine¹⁶ have carried out a series of intravenous injections in all three types of malaria. In benign tertian, they found that a single injection of 0.9 gram N.A.B. will cause the disappearance of *P. vivax* from the blood in 24 hours but relapses are not infrequent. They came to the conclusion however that injections of N.A.B. and Quinine were more effective than N.A.B. alone or Quinine alone. In cases of quartan and malignant malaria, N.A.B. had no effect whatever. Later reports have shown that there is a certain amount of danger in the treatment, because N.A.B. may light up a latent subtertian infection and deaths have occurred before the parasite was recognised.

Stovarsol. In 1925, Ciuca and Alexa¹⁷ reported on 27 cases of malaria treated by intravenous injections of Sodium Stovarsol. The initial dose was 0.25 grm. daily, rising to 1.5 grm. Incidentally one-third of the cases developed Nephritis. In malignant malaria the drug had no effect on the parasites at all. In benign tertian, the parasites were affected to a certain extent but in no case did the splenic enlargement disappear. About the same time Alvarado and Gonzalez¹⁸ reported on five cases of malaria treated orally by Stovarsol. Tablets of Stovarsol (0.25 grm. each) were given 4 to 6 times daily. In benign tertian cases, no parasites were detected in the second examination; in malignant they peristed.

A-Malairin is a preparation which has been recommended in cases of chronic malaria. It is a glucoside of the phenylarsenide group and is given by intramuscular injection in 1 cc. doses weekly. Spencer¹⁹ has tried this treatment in eight chronic cases from the Army and he reports that in no case did one course of treatment bring about a cure.

Sodium Cacodylate of which the usual dose is $\frac{3}{4}$ gr. but of which as much as 10 gr. has been given intravenously, has no effect on the parasites when given alone but is a useful adjuvant when given with quinine.

These are only a few of the arsenical preparations which have been exhibited and the results except in the case of Neosalvarsan have not been very encouraging. With regard to preparations of Antimony the results have been less successful.

Tartar Emetic, given intravenously, for which such high claims were published a few years ago, has now been abandoned as a malarial parasiticide.

Antimosan is a complex organic compound of Oxide of Antimony and is given intramuscularly or intravenously in doses of 1 cc. every second day. Van den Branden²⁰ reports that after giving a series of injections in eight cases of malaria the parasites still persisted. Larg eand Bonavia²¹ in India treated 40 cases of relapsing malaria amongst soldiers with a combination of Antimony and Arsenic. The Antimony form used was von Heyden 471, the arsenic was in the form of Stovarsol or Soamin. At the same time seven control cases were given quinine. Of the 40 cases, none of them improved so much as those on quinine alone.

With regard to the effect of Mercury, several clinicians have experimented with intravenous injections of Perchloride of Mercury, 2 to 4 c.c. of the official liquor being the usual doses. While in most cases the parasites disappear rapidly from the peripheral blood, it has been noted that relapses occur very frequently.

Lately a mercurial dye has come to us from America with a reputation for wholesale sterilisation. It is known as *Mercurochrome Soluble—220*, and is usually given intravenously in 1% solution. The dosage varies according to the body weight and for a man, 20 to 30 c.c. can be given once or twice at intervals of three or four days. Eubanas²² has treated some cases in the Phillipines and reports that while the malarial symptoms tended to disappear and there were no marked ill-effects, the parasites in the blood persisted in all cases. Two surgeons, Dundas and Telang²³ have treated a number of cases in India and their conclusions are worth quoting:

1. *Mercurochrome 220* has no effect on malarial parasites even after two doses.
2. Stomatitis and ptyalism were marked features in every case.
3. The drug appears to irritate the kidney tissue to the extent of producing a mild nephritis, as was shown by examination of the urine, in every case.

Mercurochrome therefore is not the panacea which it was thought to be. One might enumerate other systems of treat-

ment which have had their rise and, in most cases, their fall even within our own time, and to-day after a trial of 300 years cinchona, or its derivatives, remains the predominant drug in the treatment of malaria.

The question that troubles most of us is: What is the most effective and the most economical method of exhibiting the drug? The chief alkaloids of cinchona bark are four in number.—Quinine, Quinidine, Cinchonine and Cinchonidine, and a lengthy piece of research undertaken by Ascoli²⁴ has placed these alkaloids in the following order of effectiveness

1. Quinidine
2. Quinine
3. Cinchonine
4. Cinchonidine.

But economic considerations leave quinine sulphate definitely established as the drug for the million. In all cases of tertian or quartan malaria it is rapidly effective on the schizont stage of the parasite, but the sexual forms are highly resistant.

Quinine sulphate should therefore be given two or three hours before a paroxysm of fever is expected, and for that reason my routine treatment is to administer 10 gr. by mouth four times a day for the first week and continue with half that dose for at least another three weeks. For intramuscular injections, the bihydrochloride is preferable on account of its greater solubility, and the most effective method of dealing with subtertian malaria is to give 10 gr. quinine bihydrochloride intramuscularly on three consecutive days, after which oral quinine is continued as in benign cases.

Of course a preliminary purgation with Calomel and Salts is an important part of the treatment.

Except in very urgent cases of cerebral malaria there seems to be no point in giving quinine intravenously, and there is always a danger of inducing thrombosis by the mass destruction of parasites in the cerebral capillaries. A curious fact pointed out by Fletcher²⁵ is the rapidity with which quinine administered by any route is absorbed and begins to appear in the urine. After a dose of quinine by the mouth, traces will be found in the urine within 20 minutes, and after an intramuscular injection within 30 minutes. The dangers of intravenous injection therefore are not balanced by any material gain in time.

The exact method by which quinine destroys the plasmodia has been the subject of controversy for some years. Like

Emetine in the case of Amoebiasis it is not the direct action of the quinine which kills the parasites. Bass²⁶ kept a culture of *P. falciparum* in a 1 in 4000 solution of quinine for 5 hours before there was any evident degeneration of the forms. Kirschbaum kept *P. vivax* in equal parts of citrated blood and 1 in 5000 quinine before injecting them into a man with G. P. I. and they were then infective. On the other hand it is estimated that the highest concentration of quinine in the blood after intra-muscular injection is 1 in 150,000. It is obvious therefore that the action is indirect and that the quinine has some effect on the body fluids which render them antagonistic to the parasite.

Two other cinchona preparations should be mentioned on account of the reputation with which they appeared. These are Cinchona Febrifuge and Quinetum both of which contain a mixture of all the alkaloids of cinchona bark. The reports on these two preparations by Fletcher²⁸, Ciuca and others²⁹ show clearly that they are not more effective than pure Quinine.

The latest development in the therapy of Malaria is the search for a synthetic product containing the quinoline nucleus of the quinine molecule and the most promising result so far is the German preparation Plasmochin.

Sioli and Mühlens³⁰ report only a modified success with this drug in Germany.

During the past year Manson-Bahr³¹ has treated a number of cases in London. He administered the drug in tablet form, 1/3 gr. five times daily, and he found that the most remarkable action of the drug was on the sexual forms of the parasites which are so resistant to quinine. Relapses occurred in some cases of sub-tertian malaria and he therefore came to the conclusion that a combination of Plasmochin and Quinine was more effective. The disadvantage of the drug is its toxicity, some of the patients developing severe cyanosis.

We have not yet discovered the perfect drug, but this is the first of a series of synthetic products which certainly give promise of something even more effective than quinine.

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SYPHILIS OF THE NERVOUS SYSTEM IN CHINA.

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The frequent occurrence of syphilis in a country does not mean that there is a corresponding frequency of syphilitic lesions of the central nervous system (C.N.S.), especially of neurosyphilis in the strict sense—tabes and general paralysis. Reliable observers have found, that in some countries which have not yet or have only been little touched by modern civilisation as for instance Bosnia, Abyssinia and other districts in Africa, syphilitic infections were quite common, but tabes and general paralysis practically do not exist. It seems that for the development of the so called meta-or para-syphilitic diseases besides the syphilitic virus, the help of another agent is essential to render the C.N.S. in some way more susceptible to the infection; or the biological qualities of the spirochaete itself might have undergone changes which enable the virus to attack the C.N.S. more successfully and produce specific lesions there. (Neurotrophe virus.)

In spite of the many and interesting results which have been obtained in the research on spirochaetes since the discovery of the spirochaeta pallida in the tissue of the brain and spinal cord, the question still cannot be answered why tabes or its sister disease general paralysis develop in one syphilitic individual and why they do not in so many others.

First of all it seems to me necessary to examine carefully, if and to what extent neurosyphilis is prevalent in the so-called uncivilised countries and those parts of the world which have not yet been medically explored. For obtaining reliable results the work of medical men with special neurological training is needed. If these, as has been suggested, collect data for comparative international statistics with regard to the prevalence of tabes or General Paralysis new light may be brought in our conception of neurosyphilis by the forthcoming results.

As regards China little is still known on the subject, and I endeavour in this paper to make a small contribution to the solution of the problem. For many years a pupil of Professor Erb, the propounder of the theory—as it still had been at that time—of the syphilitic origin of tabes and general paralysis and the ardent fighter for its recognition, I felt since that time especially interested in the question of neurosyphilis and its possible producing factors. During my 3 years' activities as neurologist at the P.U.M.C. I was fortunate enough to be able

to continue my studies with all scientific facilities on a larger scope.

The following represents the results of my observations in the inpatient and outpatient clinics of the P.U.M.C. hospital in 1923, 1924 and 1925; the cases have all been examined by myself and the laboratory tests performed by well trained assistants. I shall not confine myself to the discussion of neurosyphilis in the strictly pathological sense, but also deal with other syphilitic lesions of the C.N.S., of the earlier stages, as well as with the luetic affections of the blood vessels and meninges of the brain and spinal cord. Although the clinical picture of these various forms shows a manifold aspect, the common ætiological source ranges them all under the same pathogenetic entity—syphilis of the C.N.S.—and since Noguchi was able to demonstrate the spirocheta pallida in the substance of the brain and spinal cord in cases of general paralysis and tabes the para-or “metasyphilitic” diseases can no longer be considered as an essentially different group.

Before dealing with the nervous lesions it is necessary to enter on the question of the prevalence and frequency of syphilitic infections in general. Syphilis has already been known in China as a widespread popular disease for many centuries. According to old Chinese literature it appeared for the first time at the end of fifteenth century in the south of the country and was known as Kwang Tung Chuang (廣東瘡) or Yeung Mui Chuang (楊梅瘡)—peach blossom rash—in the region of Canton. It was probably introduced from the Malays by Portuguese who were frequently trading with southern ports. In India the Phiranga or “French disease” made its appearance only at the beginning of the 16th century.

Soon after syphilis had become known, at the onset of the 16th century the use of the sarsaparilla root was mentioned as an efficient remedy against the new disease. Later mercury was applied for treatment which in the Chou dynasty (1130-250 B.C.) was used against various diseases and in various forms mixed with powdered herbs and fat or with arsenic. The primary sore, “the ulcer of the God of jealousy” was treated with Kin Fen—a calomel preparation—or with sublimated mercury.

In the Mui Chong Pi Luk, the secret papers on syphilis, which appeared in 1632 the first extensive description of the disease and its treatment was given and it is interesting to learn that already the medical experts of the Ming dynasty had the conception of a “fixed poison” which would come into action if by incorrect use of mercury the remaining poison was suppressed. As the effect of this “fixed poison” already in a person of 30 years of age paralysis of limbs and tremor would ap-

pear. The patient would laugh or become violent, and epileptic fits, ptosis and paresis of the face would follow. These reports show clearly that the physicians of 300 year ago were excellent observers; their findings can scarcely be interpreted otherwise than that neurosyphilis was existing already at their times. The fact also that its development has been brought into connection with a fixed poison produced by way of the treatment shows that this "modern" view has already been held for a long time.

As official medical statistics are not available in China it is difficult to estimate the frequency of syphilis in this country. The mission hospitals and medical schools are the only sources for statistic material. But most of them register their outpatients only numerically without giving a diagnosis and as only serious cases of syphilis are admitted to the wards a very unsatisfactory picture with regard to the frequency of the disease is obtained. After having gone through the annual reports of 40 of the larger hospitals I would thus have come to the conclusion that syphilis is a rather rare disease in China. Certainly this is not correct. But again in institutions in which the diseases of the outpatients are registered the number of the cases of syphilis is small, thus 5 large hospitals in Shanghai with together over 30,000 patients within one year report less than 300 cases or less than 1%, whilst the Shantung Road Hospital alone records an average of 6.6% during the period from 1830-1925. Figures from Hong Kong vary between 1.5-3.2% of all admissions between 1912-1924, and 5 Plague Prevention Service hospitals in North Manchuria record 2.9-8.1% (average 6.4%), whilst New Chwang claims 13.5% (Wu Lien Teh). The report of the Shantung Christian University Hospital in Tsinan in 1923 registers 635 cases of syphilis or 2.8% of all outpatients; * in 3% the C.N.S. was involved. In the syphilitic department of the P.U.M.C. hospital which has only recently started with a more specialising registration, among 15,500 outpatients, the average of the last few years, only 3.9% of clinical syphilis were observed, of which primary sores form the fifth part; serious forms and also tertiary stages were comparatively rare. Yet all these figures do not represent the real morbidity. It is evident that syphilis is much more common in China than we can possibly prove with any practicable method. Its widespread occurrence is to a great extent due to the large number of prostitutes all over the country and of soldiers who chiefly are responsible for the spreading of the infection. Scarcely any of the latter who came into the hospital had not previously contracted the disease and it is therefore not astonishing that the soldiers represent a great part of certain syphilitic lesions of

* The incidence in a recent report amounts to 5.7% (Heimbürger.)

the C.N.S. I may mention here that primary sores even among men over 50 are not rare.

The indifference of the great mass towards the venereal infection which is considered as a more or less inevitable additional gift of sexual intercourse and the little attention which is usually paid to a thorough treatment further add to the frequency of the disease, and also explain why its primary stage is comparatively rarely seen in the hospitals. But if the material of a large hospital is searched for syphilitic infections in the history of the patients we will find astonishingly many positive cases. If I compare my experiences on this line in China with those I have gained at a large clinic in Germany I have the impression that syphilis was more frequently found in the history of my Chinese patients.

Systematic examinations of the blood enable us to draw much more correct conclusions with regard to the frequency of syphilitic infections; by this method a much higher percentage is obtained. Among 502 Wassermann tests on patients of the P.U.M.C. hospital in the year 1919/20 R. Sia found 120 or 23%—of these 36% soldiers—positive reactions. In most of these cases however the clinical diagnosis of syphilis has already been made. As further the tested cases represent only 67% of all admission the high percentage of positive cases is not a correct proportion of the total admissions. The same holds good for the figures of J. Snell, who found 39% positive Wassermann reactions among 752 patients or 67% of all admissions of the Soochow hospital. As he further states that 32.1% of all inpatients were suffering from malaria, which frequently gives a positive Wassermann reaction his estimation with regard to the frequency of syphilis is a good deal too high. Of more value are the results which J. Kornis obtained when examining 800 applicants before their appointment as employees in the P.U.M.C.; in 12%—of which 5.7% were females—the Wassermann reaction was positive.

In collecting the data of the blood tests performed in 1925 in the P.U.M.C. hospital I came to the following result: **In 40% of the total of about 15,900 patients blood tests have been made, 22% of the tested persons or 9% of the total number gave positive reactions, in which the females took part with 10%. The latter figures of course represent only approximate numbers, but they give at least the upper and lower limits, as the positive cases to a certain extent form a selection of persons suspected for having contracted the disease. On the other hand amongst those who did not give rise to suspicion of being syphilitic and who therefore had not been tested one or the other case might have turned out positive. The figure which would express the real morbidity probably would be found rather nearer to the**

lower than to the upper limit. Malaria is rare in Peking and therefore can be disregarded as a factor which might influence the statistics.

On account of the great importance which nowadays is attributed to the influence of therapeutic measurements on the development of neurosyphilis I have to dwell shortly on the present methods of treating syphilis in China. The remedies which already for a long time are used against the disease chiefly consist of mercury and its compounds calomel and cinnabar, arsenic, lead and innumerable herbs among which the root of sarsaparilla plays an important role. The metallic substances are inhaled or given as powders or pills in hot wine; frequently they are mixed with animal or herbal material, or applied upon the skin in the form of ointments or plasters. From the stomatitis, loss of teeth and still more serious consequences which I have not infrequently seen follow an antisyphilitic treatment by a quack doctor, I conclude mercury is often applied very rigorously. The primary sore is usually treated only locally. Since the great war the use of salvarsan has rapidly found its way into China and nowadays the preparations named 606 and 914 are only too well known, even among the lower classes. Besides the original German products salvarsan and neosalvarsan, the American product arsphenamin and the French novarsenobenzol are commonly but often rather indiscriminately used. The necessity of a thorough and systematic treatment is usually not realised by the patient who after the visible signs of the disease have readily disappeared does not think the continuance of further treatment necessary and stays away from it. According to statistics of the "London Hospital" in Hankow in 1923 of 369 patients, 55% came for the first injection, 30.3% for the second, 14% for the third and only 0.3% for the fourth injection.

Especially in the large cities in the East of China frequently those cases of incomplete treatment are met with, which developed various nervous symptoms of the kind as they were first observed in Germany in the first years after salvarsan had been introduced into general practice. This reaction on the part of the C.N.S. was then called **neurorecidive**. The misuse of salvarsan is especially often practised in China and in my experience it is not rare that an injection of the drug is given without justifiable indication, only to please the patient who asked for the drug which in his opinion is good for everything.

To obtain reliable figures with regard to the prevalence of syphilis of the C.N.S. in China is still more difficult than to collect data of the frequency of syphilitic infections in general. Most medical men out here lack any special neurological training and have little interest in the subject; therefore in most hospital

reports nervous diseases are utterly neglected or insufficiently recorded and specified so that these reports are valueless for a scientific use.

Also in the medical literature there is little published on the subject. S. Hodge in 1907 reports that in Hankow transverse myelitis (of syphilitic nature ?) is fairly common, but he gives no further details. In Jefferys and Maxwell's "Diseases of China" (1911) it is stated that: "transverse myelitis of an almost certainly syphilitic origin is relatively common". In a later paper J. Maxwell remarks that vascular hemiplegia of young adults is more common than in the Occident. But this statement is merely based on impressions and figures are not given. The only publication of statistical material based on serological examinations is the report of Lennox on 65 cases of "neurosyphilis"—among these 26% soldiers—which he observed during the last three years of the existence of the former P.U.M.C. hospital. Excluding the cases of true neurosyphilis—tabes and general paralysis—to which I shall refer later there are 29 cases of transverse myelitis, 14 of "cerebrospinal syphilis" and 5 hemiplegia, altogether 0.23% of 35,000 outpatients, six times the amount of the total number of cases reported from 14 other great hospitals in China.

The results of Lennox serve well for comparison with my own observations which I have made a few years later at the same institution covering an equal period of years. But at my time the chances for collecting neurological data were essentially more favourable, as the P.U.M.C. has then greatly developed in size and fame and by the formation of a special neurological department has attracted and increased the attendance of patients with nervous diseases. As the latter chiefly originated from the capital itself or its near neighbourhood the incidences represent a fairly accurate picture of the local morbidity.

In the following the results are given of my own observations on the outpatients and inpatients during the period from November 1922 to the end of October 1925. In most cases the clinical findings were corroborated by repeated blood and spinal fluid examinations which are missing only when the patients refused punctures of any kind; but this only rarely happened. Of cases with a positive blood Wassermann reaction (B. WaR), but with negative spinal fluid or liquor reaction (L. WaR) I used for my statistics only those in which the spinal fluid showed other pathological findings as increased cell and protein content. Certainly there is a possibility that in a syphilitic, liquor-negative individual with the symptoms of myelitis a non-specific tumour may exist. I therefore counted only those cases in which after the results of the double—lumbar and cistern puncture and the X ray picture, taken after iodipin

injection, the presence of a tumour could be excluded almost with certainty.

The total of syphilis of the C.N.S. including tabes and general paralysis amounted to 314 cases or 17% of the neurological and 0.7 of all patients who visited the hospital during the three years.

With regard to the 212 cases (11% of the neurological, 0.5 of the total material) of the earlier stages—excluding tabes and general paralysis, which I shall discuss separately at the end—6 men had denied a specific infection, 85 (40%) had noticed a skin rash and about half of the cases was treated with salvarsan, the rest with some other drug. The incidences showed the following distribution: 68 cases in 1922/23, 67 in 1923/24, 77 in 1924/25. The lowest number in the second year of reference was probably due to the northern civil wars which in this year prevented the soldiers from attending the hospital clinics. Table 1 represents the various forms of the C.N.S. with regard to frequency:

Table 1.

Neurorecidives	53
Myelitis	50
Meningitis	47
Arteritis	28
Spastic Spinal Paralysis	21
Brainsyphilis	5
Neuritis	5
Epilepsy	2
Gumma	1
	212

The number of neurorecidives is astonishingly large and in my opinion it is due to insufficient and unsystematic treatment with salvarsan. Also the cases of transverse myelitis and those of pure spastic spinal paralysis which (as I shall show later, form a separate group different from the transverse myelitis),—were more frequently observed than I used to see them in Erb's clinics. Of the epileptics which figured so largely in number in our neurological patients, in only two cases could the syphilitic origin be established.

Neurorecidives.

According to age the patients range as follows (table 2):—

Table 2.

Below 20 years of age	6 (2.8%)
21-30 " "	65 (30.6%)
31-40 " "	83 (39.1%)
41-50 " "	46 (21.6%)
51-60 " "	10 (4.7%)
Over 60 " "	2 (0.9%)
	—————
	212
	—————

The youngest patient was 18, the eldest 63 years of age; nearly half of the incidences occurred in the period between the 26th and 35th year.

Table 3 illustrates the distribution with regard to **occupations**:

Table 3.

Soldiers	36	} 50 (23.5%)
Officers	14	
Merchants	36 (16.9%)	
Students	20 (9.4%)	
Labourers	15 (7.0%)	
Servants	15 (7.0%)	
Without occupation	14 (6.6%)	
Clerks	11 (5.1%)	
Farmers	10 (4.7%)	
Officials	9 (4.2%)	
Policemen	8 (3.7%)	
Housewives	6 (2.8%)	
Technicians	6 (2.8%)	
Coolies	4 (1.8%)	
Peddlers	4 (1.8%)	
Actors	2 (0.9%)	
Monk	2 (0.9%)	
		—————
		212
		—————

As in many other countries so in China, the soldiers contribute a great deal to incidences of syphilis of the C.N.S.; they participate with the following figures in the various forms:—

- 16 neurorecidives.
- 13 meningitis.
- 8 myelitis.
- 6 spastic spinal paralysis.
- 4 arteritis.
- 2 neuritis and
- 1 gumma.

In more than half of the cases the symptoms of a basilar meningitis induced the soldiers to seek medical aid and nearly always could be traced to insufficient and inadequate treatment.

The number of men from the country is remarkably small, besides several of these had contracted syphilis when serving as soldiers. The ricksha coolies also contribute only with a very small number to the frequency, although they represent a significant part of the population in Peking; they are not rarely infected with syphilis and exposed to great changes in temperature and physical strains; but being poor they cannot afford an expensive antisyphilitic treatment. The Chinese woman is not yet accustomed to attend a hospital and especially a foreign institution, therefore she figures only as a small number in the statistics, besides she does not feel much inconvenienced by changes in the motor apparatus of her legs since she is used to being handicapped in her gait by bound feet which still are often seen especially among the elder women.

The group of **neurorecidives** with the discussion of which I will commence includes only cases in which in the early secondary stage after more or less acute symptoms paralysis of one or several cranial nerves had appeared. In each case salvarsan had been given in small or scattered doses. **Table 4** illustrates the involvement of the various nerves.

The facial nerve was most frequently involved, namely in 83% of all cases, seven times on both sides and only once in a woman. In every case the acoustic nerve of the same side was very markedly affected at the same time. Persistent headache, dizziness, severe tinnitus, impaired hearing—rapidly diminishing often to complete deafness, and sometimes repeated vomiting were the usual symptoms in the patient's history which, with great probability, suggested the syphilitic nature of the condition; in common Bell's paralysis the general symptoms are scarcely ever so severe and the acoustic nerve is usually affected

TABLE 4.

III Nerve		V Nerve		VI Nerve		VII & VIII Nerves		VIII Nerve	
<i>Right</i>	2	<i>Right</i>	3	<i>Right</i>	1	<i>Right</i>	19	<i>Right</i>	2
<i>Left</i>	5	<i>Left</i>	2	<i>Left</i>	2	<i>Left</i>	7	<i>Left</i>	3
1 case combined with VII 1 case combined with VIII 2 uncombined		1 case combined with VI 1 case combined with III 1 case combined with VII 5 uncombined		1 case combined with V 1 case combined with III and VIII		1 case combined with III 1 case combined with VII 5 uncombined		1 case combined with III 1 case combined with V 1 uncombined	
Total 7.		Total 8.		Total 3.		Total 42.		Total 5.	

to a much lesser extent. It is just these grave symptoms which, initiating a syphilitic facial and acoustic neuritis involve the danger of being mistaken for an acute mastoiditis and jeopardise the patient being handed over to the chisel of the surgeon. The shock of the operation may further aggravate the condition, as the following case shows, in which after operation, complete paralysis of both legs and a progressive meningo-myelitis set in.

No. 80. Kao, aged 33 years, soldier.

March 1923 primary sore, followed by rash, discontinuance of treatment after 4 injections of salvarsan, August: joint pains, tinnitus, headache, decrease of hearing, especially on the right side, September: increase of symptoms, facial paralysis. Admission to the Ear Department.

Findings: Peripheral facial paralysis on the right side, deafness of the right ear, right mastoid process tender on pressure (?), motor power of legs slightly diminished, patellar reflex feeble, Achilles and skin reflexes normal, no Babinski, bladder O.K.

11. 9. 23. Mastoid operation, normal findings.

12. 9. Complete flaccid paralysis of both legs, hypoaesthesia from the umbilicus downwards, tendon and skin reflexes scarcely elicitable Babinski positive, rententio urinæ. Spinal fluid: slightly yellowish 250 cells, total protein 1.1 mg., colloidal gold: 24444320, LWaR †††† B WaR ††††. After a few days complete anaesthesia and analgesia of the previously hypoaesthetic areas.

After 3 months' treatment with neosalvarsan intravenously and intraspinally and with Hg still no improvement. Discharged.

The isolated affection of the acoustic nerve was observed only three times, once merely extending on the vestibular apparatus.

Next to the facial in frequency comes the trigeminal nerve which was affected 5 times alone and in 3 cases together with other nerves, in two patients on both sides, each time also involving the motor branch. In one case the primary sore was situated at the lip, another patient made an accident to his head responsible for the numbness in his face. Neuropathic keratitis regularly was associated with these forms and in 3 cases led to the loss of one eye.

Paralysis of the oculomotor nerve occurred three times separately, and in 4 cases together with the fifth, sixth, seventh and eighth nerve.

The **abducens** was paralysed in 3 cases but always together with other nerves, the third, fifth and seventh.

I should like to emphasize the fact that in nearly all cases of this group the patients had noticed a rash, on account of which the patient sought medical advice. 10 patients could not recollect the number of the injections they had received, the remaining 43 had the following treatment:—

1 injection	19 (44%)
2 injections	7 (16%)
3	„ 10 (23%)
4	„ 4 (9%)
5	„ 2 (5%)
6	„ 1 (2%)

In several patients who had been treated in our syphilitic clinic with small doses (0.45) of novarsenobenzol and who later developed neurorecidives, each injection was followed by a marked reaction—**headache and giddiness = symptoms which may be taken as warnings for an imminent meningeal attack!** Some of the patients themselves attributed their nerve palsies to the effect of the previous injection. All these palsies appeared within the first year after infection, the earliest being at 2 months after it. The average time after the last injection was from 6 to 8 weeks, in one case only 17 days had elapsed after the only injection.

In a former paper (China Medical Journal, October 1925) I have discussed the hypothesis of the provoking effect which an **inadequate** treatment may have on the development of nervous lesions and at the present time this view is supported by many writers. My observations in China at least have more or less all been in favour of the hypothesis.

In 4 patients of this group no Wassermann tests had been made but I do not hesitate to include these 4 cases as neurorecidives since they displayed manifest signs of syphilis and had also been treated with salvarsan. In 8 cases the B WaR was negative but the L WaR positive, in 6 cases the L WaR was negative, but cell and protein content were increased. Polycytosis was always found in the spinal fluid, in the average 30-60 cells in the cmm (Fuchs-Rosenthal chamber). In a few cases with the clear symptoms of an acute meningitis the cells reached 300 to 500. Xanthochromia was once observed together with a high cell

count. In all cases the protein content was similarly increased, on the average to 0.8—1.0 mg. per ccm., and 1.75 mg. at its highest.*

The following 3 cases are typical examples of neurorecidives:

No. 111. Fang, aged 33, pregnant in the 7th month, husband under treatment for primary sore.

March 24: maculo-papulous exanthema, B WaR ††††, novarsenobenzol 2.6 grms. within two months, May: delivery of a healthy child, June: beginning deafness. October: deafness increased, dizziness, at times fainting attacks.

Findings: R. ear completely deaf, ear drum o.k., B WaR ††††, L WaR †††† cells 10, protein: 0.8, colloidal gold: 1122320.

No. 161. C'hen, aged 22, servant.

Sept. 24 primary sore, December skin rash. On the 2nd and 9th of January each time 0.6 novarsenoberzol. B WaR 0.1 to 0.025 ††††.

16 January 0.45 novarsenobenzol afterwards headache and dizziness. 27. January and 17. February each time 0.45 of the same drug. (Total 2.5 grms.) The rash had disappeared, but in the middle of March a complete facial paralysis and deafness on the left side was noticed. B WaR 0.1 to 0.05 ††††, L WaR 0.5 to 0.625 ††††, cells 17, prot. 0.9, colloidal gold 22354430.

No. 192 Chang, aged 23, merchant.

February 25, primary sore. April skin rash, one injection of salvarsan (dose?) 6 weeks later facial palsy and deafness, first on the left, then also on the right side, headache and dizziness. Finding in June: complete bilateral facial paralysis and deafness. Ear drums o.k. B WaR 0.1 ††††, 0.5 ††, L WaR 0.5 to 0.125 ††††, cells 35, prot. 0.84 goldsol 45543210.

Meningitis.

Whilst in neurorecidives the cranial nerve symptoms stand in the foreground the latter are missed in the group of meningitis. The latter forms only clinically a separate group since there are no essential differences in the pathological process but only in the localisation and probably in the degree of the process. Of 47 cases of meningitis 6 developed in more or less acute way in the beginning of the secondary stage after a few injections of salvarsan had been administered. They can be considered as meningorecidives without participation of the cranial nerves. In 11 cases the symptoms had developed in the latter stages of the disease, cranial nerve palsies were scarcely detectable or had already disappeared, the connection with a previous treatment could not be proved. According to their nature these 11 cases may be classi-

* Note: The total protein is determined by the sulfosalicylic acid method and the nephelometric comparison with a standard protein solution.

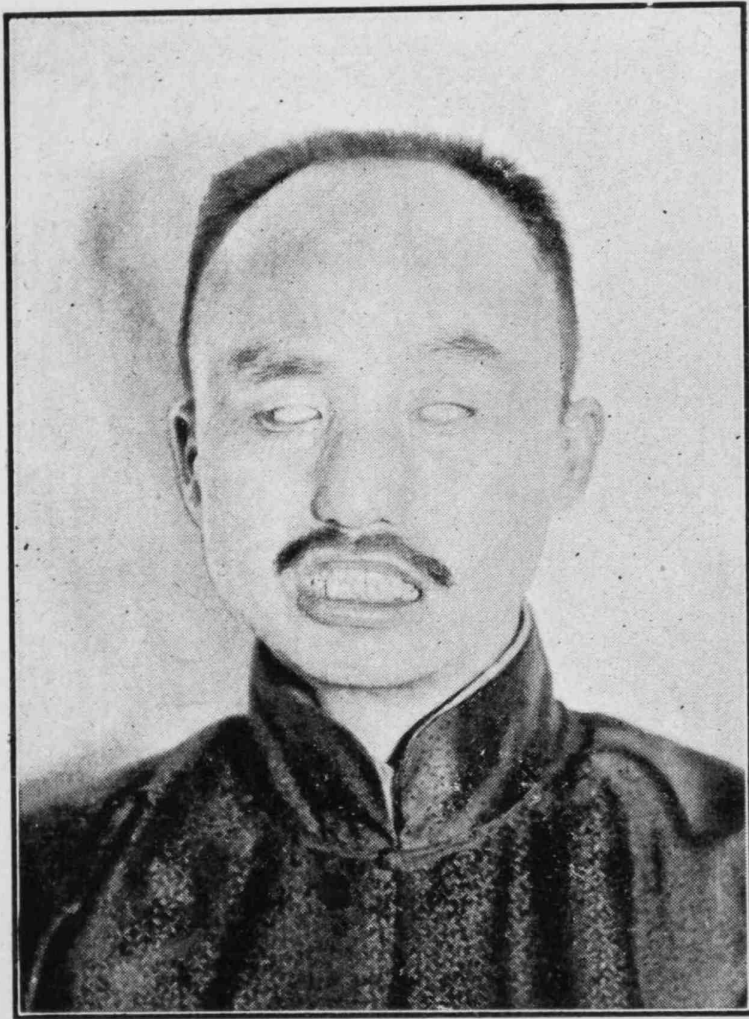


Figure 1.
Double Facial Paralysis inability to close eyes
and mouth in spite of effort.
(No. 192, CHANG).

fied as late recidives and belong to the first group. The symptoms of the remaining 30 cases consisted in persistent headache, dizziness, tinnitus, dim vision and similar troubles. In 5 patients increased tendon reflexes and paraesthesia in the legs indicated the beginning involvement of the spinal cord. The spinal fluid was positive in 7 cases in which the B WaR was negative, in 6 cases the blood was found positive, but the fluid negative; in the rest both reactions proved positive. All cases showed an increase in cell and protein content.

In 3 cases of a very acute and heavy onset the spinal fluid was very rich in cell elements. In the following case over 1,000 cells were counted, besides there was slight xanthochromia.

No. 112 Liu, aged 38, soldier.

Oct. 23 primary sore, Hg treatment, since January 24 headache and dizziness, previous to admission symptoms became worse, tinnitus and vomiting.

March, findings on admission; Somnolent, repeated vomiting, Kernig's sign positive, pupils $r < 1$, light reaction sluggish, beginning papilloedema, tendon reflexes diminished, skin reflexes active, sphincters o.k. B WaR ††††, spinal fluid slightly yellowish and turbid, 1152 cells, mostly lymphocytes, total protein 4.86, WaR †††† Colloidal gold 4555543210. Treatment with neosalvarsan intravenously and endolumbarly, and bismuth.

After 3 weeks the patient had no complaints except slight headache. The spinal fluid had become almost clear, cells 300, protein 4.20, serological findings not changed. The patient felt so well, that he insisted on being discharged.

Myelitis.

The 50 cases of myelitis all displayed typical signs of a transverse lesion, bilateral motor and sensory as well as sphincter disturbances. In 5 cases the legs were completely paralysed, in the rest more or less spastic paresis existed with increased tendon reflexes—mostly to the degree of a clonus—, positive Babinski, Rossolimo and Bechterew reflexes. In two patients also a continuous clonus of the muscles of the upper arm could be elicited. The superficial or skin reflexes were absent with a few exceptions, in which they were diminished. The constant absence of the tendon reflexes in 3 cases indicated that the process was located in the lumbar region.

The sphincter troubles, in 5 patients the first symptoms of the beginning disease nearly always started as retention of urine followed by incontinence after some time. 6 patients had cranial nerve symptoms. In 4 acute cases a complete motor and sensory paralysis of both legs accompanied by extensive skin necrosis had developed within a few days. In 7 cases the B WaR was negative and the L WaR positive, in 8 cases the findings were

the reverse, but the cell and protein contents were always higher than normal. The rest gave both serological tests more or less strongly positive with moderate increase of cells and protein. In several cases xanthochromia was present.

The average age of the patients of this group was 33.5 years the interval between infection and the first symptoms noticed $3\frac{1}{4}$ years, with 9 months and 9 years as lower and upper limit.

The first of the following 3 cases is an example of a neurore-cidive developing into a meningo-myelitis, the two others represent instances of an acute, fatally ending and of a subacute rapidly improving myelitis both with complete paraplegia of legs.

No. 186. Shih, aged 36.

Sept. 24 primary sore, followed by rash, one injection of "606." December: Dizziness, headache, tinnitus, deafness of the r. ear, facial palsy. Since January 25 increasing weakness and numbness of legs, difficult urination.

Findings in May 35: Weakness of convergence, r. facial paresis, r. ear deaf, ear drum o.k., spastic parietic gait, muscular power of both legs greatly diminished, hypaesthesia of legs, tendon reflexes increased, skin reflexes feeble, Babinski weakly positive. Incontinence of urine. B WaR 0.1 to 0.25 ††††. spinal fluid: clear, yellow, cells: 465, total protein: 2.88, WaR: 9.5 to 0.03125. †††† mastix: 25555543220.

Treatment: neosalvarsan intravenously and intraspinally.

Course: Continuous improvement of the clinical and serological condition, in July headache and dizziness had disappeared, the facial paresis was scarcely noticeable any more, but the condition of the ear was unchanged, Gait almost normal, power of legs much stronger. Tendon reflexes still slightly increased, skin reflexes active, slight weakness of bladder. Spinal fluid: colourless, cells: 64, protein: 0.7, WaR: 0.5 †††† 0.25 ††††. 0.125 negative. Mastix: 354433210.

No. 109. Mao, aged 26, merchant.

1921 primary sore, no injections. 14 Feb. 1924 great physical exertion, in the following night retention of urine and great weakness of both legs. Next morning unable to move the legs and to pass urine. After 3 days beginning skin necrosis on the buttocks.

29. Feb., 1924, finding: Strongly build, cranial nerves and arms o.k. complete flaccid paraplegia of legs, anaesthesia for all qualities, on the right side from the level of the umbilicus downwards, on the left the upper level about a handbreadth deeper; level of temperature, and pain sensation somewhat lower than the level of touch sense. All reflexes in the paralysed area absent with the exception of both cremaster reflexes, which are very feeble. Retention of urine and faeces. Skin necroses on the buttocks, B WaR: ††††. spinal fluid clear, colourless cells: 46, protein: 1.5, WaRG ††††, colloidal gold 344443210. Treatment with neosalvarsan and Hg.

Course: Increase of atrophy of the legs, and the tropic ulcerations, rapid sinking, April: spinal fluid 28 cells, prot. 1.32 WaR ††††, Incontinence of urine; motility, sensibility and reflexes unchanged. 7 May, 1923, exitus. Autopsy refused.

No. 70. C'hen, aged 31, Policeman.

Primary sore three years (?) before admission in July, 1923. First symptoms 5 weeks ago, numbness ascending from feet to knees, 10 days later weakness of the legs, retention of urine, since 3 weeks complete paralysis of the legs, no pains.

Findings: Cranial nerves o.k., complete paraplegia of legs, but muscular tonus increased, hypæsthesia from epigastrium downwards, patellar and Achilles clonus, right upper abdominal and right cremasteric reflex weakly present, but other skin reflexes absent. Babinski, Rossolimo, and Bechterew positive, incontinence of urine, B WaR ††††, L WaR ††††, Cells 6, Ross Jones ††, Mastix: 34433210.

Treatment: Neosalvarsan and J. Hg.

Course: Continuous improvement of all symptoms, when discharged in September 1923 patient went out without any support. L. WaR negative.

Gumma.

The exact clinical picture of transverse myelitis was seen in the following case of a young man who firmly stated not having had any syphilitic infection; no signs of syphilis could be detected but the autopsy revealed a gumma of the spinal cord.

No. 44, Yang, aged 22, soldier.

Admission January 25. Syphilis denied, no scar on the penis.

Nov. 22 numbness of the left, two weeks later also of the right leg, then retention, later incontinence of urine. Increasing weakness of the legs. Four weeks before admission complete paralysis of both legs.

Examination: Cranial nerves o.k., Spastic paraplegia of legs, anaesthesia for all qualities from xiphoid process downwards, clonus of tendon reflexes, but skin reflexes absent, Babinski, Rossolimo and Bechterew positive. Incontinence of urine and faeces. B WaR negative, spinal fluid: slight xanthochromia, cells: 90, Ross Jones †††, WaR ††††, Colloidal gold 12455420.

Treatment: neosalvarsan intravenously, Hg.

Course: Rapidly getting worse, exitus March 23.

At the autopsy an oval shaped intumescence of the posterior side of the spinal cord was found at the level of the 5th dorsal segment, in size about a cherry stone.

On microscopic examination the tumour proved to be a gumma which encroached on nearly the whole transverse section of the cord showing necrotic degeneration in the centre. Descending degeneration of the pyramidal tracts and ascending degeneration of Goll's columns and the cerebellar tracts. The spinal pia arachnoid was extensively infiltrated with small round cells of apparently recent origin; Spirochaetes could not be found.

The Chinese hate the idea of dying in a hospital and their attitude towards autopsies is not favourable so that we rarely were

fortunate enough to verify our diagnosis by anatomical findings. Thus in other cases which I have classified under the term myelitis similar anatomical conditions as in the case just mentioned may have produced the myelitic symptoms.

Spastic Spinal Paralysis.

The **spastic spinal paralysis** (synonym: spinal paresis, lateral sclerosis) was separated from the transverse myelitis and described as an entity of its own by Erb in 1879. Many neurologists, however, hold the opinion that the disease is only a form or stage of transverse myelitis. My clinical experience on the remarkably large material of this disease in China strengthened my view still more that the spastic spinal paralysis has to be considered as a clinically well defined form of neurosyphilis, different from transverse myelitis. I included in this group of **21 cases** only those forms which presented the clinical signs of a **pure symmetrical pyramidal tract lesion**; all cases which were complicated even with only slight sensory changes, have been added to the myelitic group, although according to Erb's definition of the disease slight sensory changes often accompany the motor lesions. The number of cases of spinal paralysis reported here therefore represents rather a low estimation.

The **clinical picture** is significant by the consistency of its symptoms: spastic paresis of both legs, the muscular power being only slightly diminished, tendon reflexes increased to the degree of clonus, skin reflexes absent, all pathological reflexes of the foot positive, sphincter troubles—(retention or incontinence)—and absence of sensory changes and cranial nerve symptoms. The history is also typical: Gradual onset with weakness in the legs slowly increasing within a period of several years after which bladder symptoms appear. Numbness or feeling of tingling sensations are always strictly denied.

On account of the important role which the reflexes play in the diagnosis of nervous diseases a few **remarks on the reflexes of the foot** may be inserted in this connexion. From Figure 3, it can be seen that even in a bound foot, a Babinski's reflex shows itself quite clearly. The reflex of **Rossolimo** (tapping of dorsum of metatarsal bones: flexion of toes) seems to me to deserve more attention than usually has been paid to it. I found this reflex constantly present in all spastic conditions, often even earlier than the Babinski reflex or at least already quite distinctly marked when the latter was still doubtful. Only in a few cases of acute myelitis the Rossolimo was absent when the Babinski was present. The **Mendel-Bechterew reflex** (tapping of lateral side of foot, flexion of toes) was found less constant than the other two pathological reflexes. If the Babinski reflex was doubtful I sometimes succeeded in making it more conspicuous by energetically tapping the bones of the lateral side of the foot in

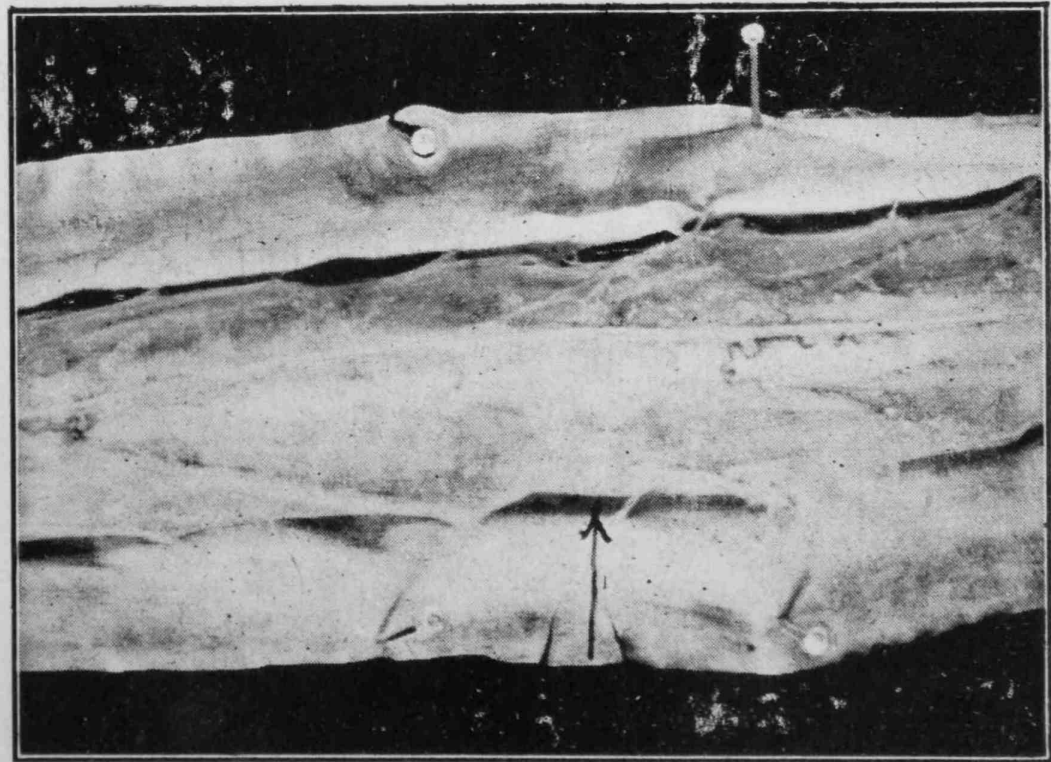


Figure 2.
Gumma of Spinal Cord at arrow point.
(No. 44, YANG).
(See Page 131)

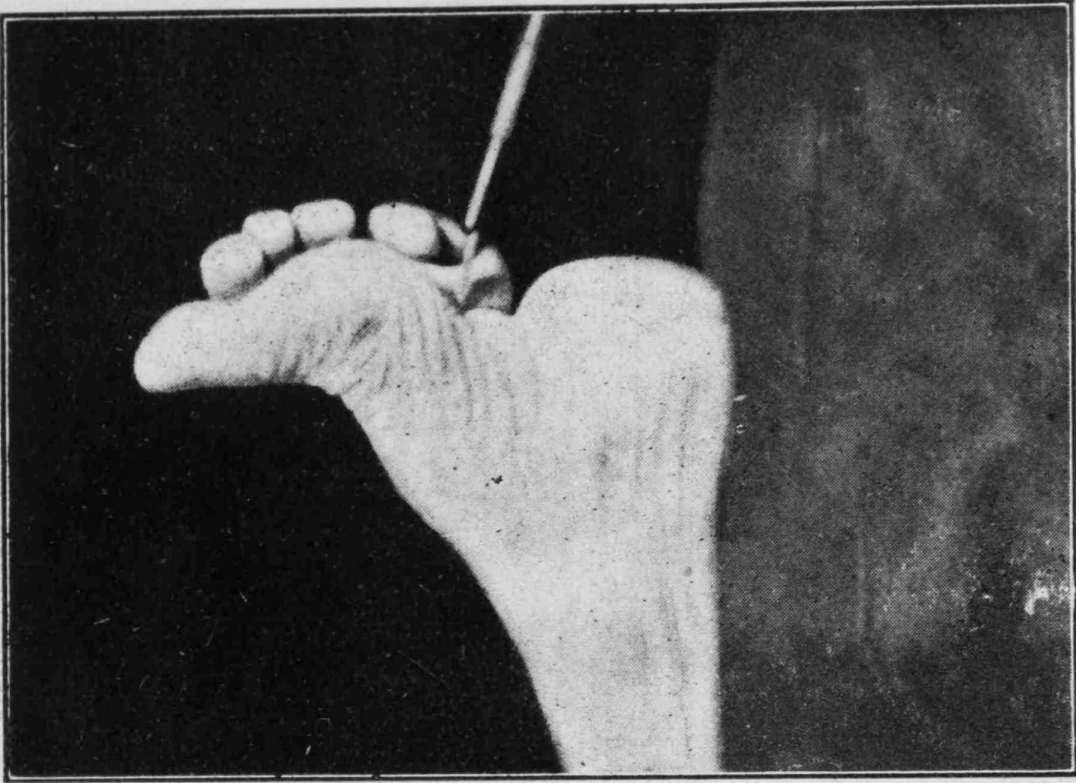


Figure 3.
Babinski in bound foot.
Extensor Reflex on stimulation with needle.

quick succession with the percussion hammer. With the same method in cases of pronounced spasticity I was able to obtain a **continuous extensor clonus of the foot**. By prolonged tapping first the big toe takes Babinski position with extensive hyper-extension, then the whole foot starts clonic lateral shaking movements in extension. In cases in which this sign is very marked the clonus can also be elicited by other strong stimuli as for instance pin pricks and also from places higher up on the leg (calf, tibia).

The B WaR was positive in all cases but four, the L WaR was positive in 12 cases; in the rest the diagnosis of syphilis was based on the findings of either a well defined scar on the penis or of an increased cell and protein content in the spinal fluid, whilst at the same time the signs for the existence of a tumour were absent. There is another disease which may resemble very much a spastic spinal paralysis,—this is the **multiple sclerosis**. But we need not consider the differential diagnosis here as the **latter disease does not seem to occur in China**. I myself have never seen a single case in this country nor have I heard of the reliable existence of one. It is striking that the disease is also absent in Japan according to information which I have received from Japanese neurologists.

The cells in the spinal fluid were only moderately increased (10-30) and so was the protein content. One-third of the patients had noticed a skin rash, all but four had been treated with salvarsan, and these with some other drugs. The following case is an **example of this group**:

No. 188, Wang, aged 33, official.

Primary sore six years before admission, no rash, three injections of salvarsan. Onset 1½ years ago with slowly increasing weakness and stiffness of both legs, a few months later difficulty in micturition, no sensory troubles on admission: Difficulty in walking, weakness of bladder.

Finding: Cranial nerves, upper limbs o.k. Spastic gait.

Legs: muscular power slightly decreased, tonous increased, sensibility normal, patellar and Achilles clonus, Babinski, Rossolimo and Bechterew reflexes positive, extensor clonus of the foot, skin reflexes absent, no trophic disturbances, moderate incontinence of urine. B WaR 0.1-0.025 +++, 0.005 negative, spinal fluid cells 21, protein 0.72 mgr. WaR 0.5 to 0.125 +++, 0.0625 negative, mastix 532210.

Course: After treatment with salvarsan and mercury discharged without essential improvement.

Much in favour of a separation of the spinal paralysis from the chronic myelitis are the following points. Firstly the experience that the **first symptoms appear comparatively late after infection**. The average interval in my cases was 6½ years with two and ten years as extreme limits. Accordingly the average age of the patients is higher than in the myelitic cases. The youngest was 28, the oldest 54 years, the average age 37 years.

Another characteristic feature is the **slow course** which the disease takes, the condition of a large part of these patients has become stationary and this without any specific treatment which quite evidently is of little or no effect in this disease.

My experiences do not agree with Oppenheim's view of spinal paralysis as being only a stage of transverse myelitis. I was never able to observe a clinical case of spastic paralysis developing into a transverse myelitis, and I am therefore inclined to place the spastic spinal paralysis as a **postsyphilitic symmetrical system** disease (on toxic basis?) into the group of the "late recidives" analogous to tabes.

Arteritis.

Arteriosclerosis with resulting brain lesions seem to be rarer than in western countries, but **hemiplegia** in individuals between 30 and 40 years of age **on the basis of a syphilitic arteritis is frequently met with.**

According to reports on post mortem examinations in Germany syphilitic aortitis has comparatively often been found in recent years, and although probably now more attention is paid to the clinical aspect of syphilis of the arteries it seems that these organs, analogously to the more frequent involvement of the C.N.S. are nowadays more commonly attacked by the syphilitic virus than formerly. It would be interesting to learn to what extent syphilitic arterial lesions, especially those of the aorta, are found in China, the large material of autopsies in Hong Kong would offer a good opportunity for such work.

Of my observations on 28 male individuals with clinical **syphilitic arteritis** the youngest was 26, the oldest 48 years of age, the interval between infection and onset of the hemiplegia in one case was only $1\frac{1}{2}$ years, in the average 4 to 6 years. In 22 patients the hemiplegia was on the right side, in only six cases on the left; the facial nerve was involved in all but a few cases. The B WaR proved positive in all but two cases, whilst in these the spinal fluid was positive. The L WaR was negative in four patients but in these all other tests of the spinal fluid turned out positive.

The onset of the palsies usually was rather slow without marked disturbance of consciousness, and frequently for some time previously severe headache had existed. The clinical picture did not differ essentially from other forms of hemiplegia of a non syphilitic origin. Sensory changes were only slight, in most cases entirely absent. In five right handed patients with right hemiplegia the speech was **not** affected. In spite of the paralysis being quite complete at the onset, rapid improvement followed in most cases, and full recovery of all functions was not rarely observed especially in young individuals.

Brain Syphilis and Neuritis.

Brain syphilis with mental symptoms was found in five cases with positive serological findings. Among the five cases of **syphilitic neuritis** the sciatic nerve was affected three times, the opticus once in the form of a neuroretinitis and another time as retrobulbar neuritis. As the latter case offers some interesting points I will present it here:—

No. 103, Chang, aged 37, officer, 26 Jan., 1924, admission.

November 1923 slight contusion of the head, a few days afterwards dim vision on the right eye which became completely blind after another four days; 10 days before admission he also lost the vision of the left eye which till then had remained normal.

On admission **both eyes were found to be totally blind, not even the slightest light sensation could be perceived.** Pupils extremely dilated without light reaction. Lens, fundi o.k. Other cranial nerves o.k. Slight spastic symptoms of the left arm and leg, the remainders of the previous hemiplegia. Urine, o.k. B WaR negative, spinal fluid: WaR ††, protein: 1.43 mgr.

Treatment: For four days in the Eye Department with injections of mirion and sweating. No essential improvement.

8 Feb. 1924 transferred to the Neurological Department. At once started with salvarsan treatment intravenously and by the endolumbar and cistern method.

Six weeks afterwards the left eye had greatly improved, the visual field of the nasal side was completed, that one of the temporal side almost restored to normal. Of colours red could be distinguished in the centre. **Patient was able to read and count fingers at the distance of about 30 feet.** WaR negative with 2 c.c., cells 9, Ross Jones †, protein 0.75 mgr.

The condition of the right eye, having persisted for too long a time had not changed, but there were still no signs of optic atrophy.

Treatment.

As regards treatment salvarsan and mercury should be given combined, one or the other alone is less effective. Especially in fresh cases of meningitis and meningo myelitis salvarsan given intravenously quickly improved the condition, cases of arteritis were also favourably influenced, but salvarsan had little or no effect in spinal paralysis. Over 30 cases were treated with Gennerich's **endolumbar method** which proved most effective in the early and acute stages of meningeal processes; the spinal fluid with regard to cell and protein content becomes assanated quicker than with the intravenous treatment alone (case 112 of the meningitic group illustrates well this good result.) Also patients with beginning meningomyelitis who on account of the spastic paretic condition of their legs were scarcely able to walk regained the free use of their legs after 4 or 5 spinal doses had been administered. Finally in cases of latent syphilis with absent clinical symptoms but with a positive spinal fluid I consider the endolumbar treatment indicated as an effective help in combatting the disease.

The **method** which I also used for the cistern treatment* is as follows: Neosalvarsan is dissolved in sterile saline solution in a proportion that one cc. of the lotion contains one mgr of the drug. One cc of this solution is then mixed with 40 to 50 cc of spinal fluid which immediately afterwards is allowed to flow back. Gradually the dose is increased at subsequent injections from one to three mgr of neosalvarsan. If less than 30 cc of spinal fluid are used for dilution or if higher doses than 3 mgr are used, symptoms of neuralgic pains, tingling sensations in the legs and retention of urine may follow indicating an irritation of the cord. This reaction although of no serious consequences and of no long duration however should be avoided. Basing on the experience made by Gennerich with the double lumbar injection that the brain can tolerate higher doses than the cord I for the first time administered salvarsan 3½ years ago also per cisternam and since then in several other cases of acute syphilitic cerebral meningitis with involvement of cerebral nerves. The good effect with the cistern method can be very striking as the case of retrobulbar neuritis (No. 103) illustrates best, but in chronic cases and nerve palsies of long standing little or no effect is to be expected. With doses up to 3 mg neosalvarsan injected into the cistern I have never seen any untoward reaction.

As the doses for the spinal treatment are comparatively small a full course of 3 — 4 g neosalvarsan has to be given intravenously during the same period and also some mercury—preferably an iodide or salicylate compound—or bismuth preparation. In my personal experience I consider the **inunction with grey ointment** (unguentum hydrargyri cinerei 4—5 g per dosis for 2 — 3 courses of 6 inunctions each) as the most effective administration of mercury, but its proper application is only feasible in a hospital. Since we know that to a great extent immunisatory processes take place in the skin, the effectiveness of the inunction treatment is probably due to the stimulation of these special activities of the skin by the massage.

Much has been written recently on the **therapy with proteins** and other fever producing agents. I will refer to this subject later when discussing the malaria treatment in G.P., but will now give only one interesting example which illustrates the **curative effects of fever** in a case of an **acute neurorecidive**.

No. 206, Lu, aged 31, soldier.

February 1925 primary sore, secondary lesions, April one injection of "606," since July severe headache, dizziness and repeatedly vomiting; before admission double vision, tinnitus, and deafness of the left ear.

* Details of the method will be found in a subsequent paper.

August: Findings on admission: Ptosis of the left lid, paresis of the left superior, inferior and internal rectus, left pupil enlarged, no light reaction, deafness of the left ear, ear drum o.k. right eye and ear o.k., facial nerve o.k. Gait somewhat uncertain. No other motor, sensory and reflex disturbances. B WaR 0.1 to 0.025 ††††. 0005 †, spinal fluid: 0.5 to 0.25 ††††. 0.125 †††. cells 10, pretein 0.64 mg. mastix 1233210.

Soon after admission, still before any antisyphilitic treatment had been given, the patient developed typhoid fever with temperatures between 99.5 deg., and 105 deg. Fah. During this period of continuous fever lasting for nearly seven weeks, the patient did not receive any antisyphilitic treatment, but his neurological condition had greatly improved after the fever had abated. The ptosis and pareses of the recti of the left eye had nearly entirely disappeared, the difference of pupils was still present but less conspicuous. The hearing on the left ear was still bad, but otherwise the patient had no complaints. What was still more striking, the spinal fluid showed a tendency of becoming normal the B WaR was only weakly positive, (0.1 †, 0.05 negative); WaR 0.5 ††, 0.25 negative, cells 8. protein 0.42 mastix 001210.

I do not hesitate to attribute the improvement of the neurological condition in this case to the effect of the fever; the experience encourages one to extend the fever therapy also upon cases of acute neurorecidives.

Tabes and General Paralysis (Dementia paralytica).

With regard to tabes Jefferys and Maxwell write in their book "Diseases of China" (1911) that they never came across a single case "nor do we know of any well authenticated case reported from China." In a paper written in 1913 Maxwell corrects his former statement by the report of 3 cases which he had seen in Formosa in the mean time and of 2 other cases which had been observed in Wuchow (Kiangsi). But still he is of the opinion that tabes no doubt is very rare when compared with the number of "cases met with at home" and further that all medical men in China will acknowledge at once, that "there is nothing like even 1% of parasyphilis." S. R. Hodge saw one or two cases of tabes in Hankow in 1907 and A. Read 2 cases in Changsha in 1915 which never had left Hunan, Read is astonished to find parasyphilis so rare in his district.

As mentioned before only a few hospital reports in China can be used as reliable sources for collecting statistical material with regard to nervous diseases and especially tabes. Moreover following the modern tendency of classifying diseases according to etiological principles, tabes appears under the heading of "syphilis" of the "C.N.S." or even simply under "Syphilis"! In 1924 eleven large hospitals in eastern China together report only 16 cases of tabes, half of them having been observed in the Naval Hospital in Tientsin. The reports of 4 large hospitals in Shanghai register only 5 cases in the same year! Questionnaires which I had sent to physicians in western China were all answered in the same way: "Tabes is very rarely or never

observed." We are not justified to draw the conclusion out of these reports as it frequently has been done that tabes at least at the present time is still a rare disease in China. The picture changes as soon as we really search for the disease. During the period of the last 3 years of the old P.U.M.C. hospital Lennox observed 16 cases of tabes, the fourth part of all patients with "neurosyphilis" or 0.05% of the total of admissions. Since then with the increase of admissions of neurological patients naturally also cases of tabes have been seen more frequently.

Within the period of three years, to which I formerly have referred, I observed 73 cases of tabes and 29 of G.P. or altogether 102 cases of "parasyphilis," which are 32% of all cases of syphilis of the C.N.S., 5% of all neurological patients, 0.2% of the total admissions and 2.6% of all syphilitic patients calculated on the incidences of the last year (1925).

Table 5.

	Heidelberg				Peking			
	F	M	Total	% of all neurol. pat	F	M	Total	% of all neurol. admissions
1922—23								
Out-patients	3	13	16	1908 (0.8%)	16	16	513 (3.1%)	
In-patients	3	14	17		5	5*		
	6	27	33		21	21		
1923—24								
Out pat....	4	9	13	1017 (1.2%)	2	18	20	661 (3.0%)
In pat....	7	9	16		4	4		
	11	18	29		2	22	24	
1924—25								
Out pat....	7	12	19	1598 (1.1%)	3	16	19	720 (2.6%)
In pat....	6	24	30		9	9		
	13	36	49		3	25	28	
Total:.....	30	81	111		5	68	73	
1903-05.....	21	68	89					

* On account of the small number of beds assigned to the neurological department in Peking the figures of in-patients are very low; the percentage figures are therefore omitted as a comparison would give an incorrect picture.

Tabes. In dealing with tabes first I give in table 5 the statistical data of a corresponding period in a German University clinic and for comparison the figures of the period of my own activities at the same clinic, 20 years ago.

The table demonstrates that in Peking the female element participates in the frequency of tabes with only 6.8%, but in Heidelberg with a number four times as much (27%). The reasons for the lower incidences of female patients have been given before. The larger figures in the material of Heidelberg are further due to visits of patients from great distances, whereas in Peking patients of this kind were very few. **The comparison of the two statistics shows that in Heidelberg in spite of its larger neurological clinics—being nearly double of that in Peking, the female attendance even three times as much—only a slightly greater number of tabetic cases had been observed in the same 3 years period.**

Statistics always include errors and fallacies but considering the circumstances which favour the larger frequency of tabes in Heidelberg, I do not think I would err with my statement **that at least in the region of Peking the incidences of tabes are more frequent than for instance in Germany.**

The group of tabes includes 5 foreigners who all had been residents in China for many years but had contracted syphilis at home. The following table illustrates the distribution with regard to the *age* of the patients:

Table 6.

Age :	20-30	31-40	41-50	51-60	61-70	years.
Cases:	2	19	31	20	1	

As in other countries the first symptoms of the disease most frequently appear in advanced age after the fortieth year. Remarkable is the great number (29%) of patients in which the onset was only noticed after the fiftieth year, five patients were 59, the oldest 70 years of age. In the latter case the symptoms of a beginning tabetic optic atrophy had only made their appearance in the last half year. The late onset of tabes corresponds to the frequent infections of elderly individuals. The youngest patient of this group, also presenting signs of a beginning tabetic optic atrophy, was only 29 years old.

With regard to **occupations** (see table 7) the merchants contributed with the largest number, whilst the military class participated with comparatively a much smaller figure than it did in the incidences of meningo myelitis. Of the affected women one was a former prostitute, the others were the wives of high officials.

Table 7.

Merchants	19	Servants	4
Officers	5	Engineers	3
Soldiers	4	Cooks	3
Without occupation	8	Car drivers	2
Officials	7	Teacher	1
Foreigners	5	Chemist	1
Women	5	Veterinary surgeon ...	1
Clerks	4	Ricksha coolie	1
			73

8 patients, all of them with a positive B WaR. denied having had a primary sore, 5 were not sure about it, the rest admitted such an infection, but 12, amongst these the women, could not remember the date of it. None of the Chinese patients had contracted the disease abroad.

In the earliest case the first symptoms appeared 6 years after the infection, before the tenth year only in 7 cases, in 28 patients the interval was from 10 to 15 years, in 11 cases of a still longer period, 2 patients dated the infection back to 30 years. A secondary rash was noticed in 12 patients (16%), 20 persons had been treated with—in most cases only a few—injections of salvarsan, 24 with Chinese medicines, the latter consist as mentioned before, chiefly of mercury. The rest partly on account of the long time having elapsed since the infection, could not remember of having had any treatment. 8 of the tabetics were opium smokers, but none addicted to alcohol, 11 formerly had malaria.

The clinical picture does not differ from the tabes we see in other countries. I cannot confirm Lennox's statement of the paucity of lancinating pains in the Chinese. It is true that spontaneous complaints of such pains are seldom made by the patients but if they are thoroughly questioned, most of them admit to have suffered from these pains or of having had them before; in more than half of my cases this symptom was present. The girdle pain has also not less frequently been observed than elsewhere.

Disturbances of vision were astonishingly frequent, in 22 cases (30%) a more or less advanced optic atrophy was found, 6 of these patients were completely blind. With few exceptions the visual troubles appeared already at the beginning of the disease. These patients had no ataxic gait except one man, in which the ataxia already existed before the optic atrophy had developed.

In 56 cases the pupils showed no light reaction, in 16 patients the reaction was sluggish and only once the pupils reacted well. I may mention that the pupillary reaction on account of the dark iris of the Chinese has always to be examined with artificial light. Anisocoria existed in 25, ptosis in 5 cases. The tendon reflexes were absent in 58 patients, in the rest either diminished or only one was missing (patellar r. once, Achilles r. 4 times). More or less distinct sensory changes could be detected in nearly all cases; hyperaesthesia for cold on the abdomen proved to be a marked symptom in $\frac{3}{4}$ of the patients. Arthropathic joints have been observed once at the left ankle and another time at the right hip, one patient had a trophic ulcer on the sole.

In 48 instances (72% of the examined cases) the BWaR and LWaR both were positive, in 10 cases the LWaR was positive and the BWaR negative, in 5 cases (7%) the findings were reversed. In 4 patients with a doubtless clinical tabes the serological reaction were reported negative by the laboratory; 6 patients had refused to be punctured. 2 of the husbands of the 5 tabetic women have been examined, none of them had any sign of the disease, but in one the BWaR was positive.

With regard to the course and the clinical picture of the disease those patients who had been treated with salvarsan did not differ from others who had been treated otherwise, at least a shortening of the interval after the infection could not be found; but as the use of salvarsan has been generally adopted in China only since after the war a marked influence of the drug on the length of the latent period can scarcely be already expected. Surprising is the great indifference often exhibited by the working class when facing even serious hindrance by the ataxia; heavy manual work is not rarely performed still in the far advanced stage of the disease. Thus a coolie was admitted to the hospital with marked ataxia, incontinence of urine and beginning optic atrophy, in spite of all this he had earned his living by pulling his ricksha until a fortnight before admission. Very often it is the disturbance of vision which urges the patient to visit the physician who then finds other symptoms already fully developed.

Salvarsan treatment in tabes has proved of little or no value. In some cases the lancinating pains had been relieved by endolumbar application. General invigorating treatment, potassium iodide and inunction with mercury seem to me more efficient.

General Paralysis. Of incidences of mental diseases especially of the frequency of G.P. in China little is still known, and for the near future there is also little hope of getting better information in this respect. The insanes as long as they can be

managed by their families are kept at their homes and, if they become too violent, the police takes care of them as for instance in Peking, where at the time I have visited such an "asylum", some 70 men and 40 women had been interned. With the exception of the hospital for insane in Canton there is not a single other hospital of this kind in the whole of China. **The urgent need for such institutions is even greater as the many other hospitals have no accommodation for insane patients and therefore do not admit them.** As to be expected under these circumstances reports concerning mental diseases are very poor.

Maxwell in his book already mentioned states that G.P. is extremely rare in China, Hodge and Lennox each report one case in Hankow and Peking, and in Shanghai three cases are registered in the last year. For this scarcity of statistical material the observations and reports of the John Kerr Hospital for Insane in Canton are of special value. According to A. Hoffman the number of paralytic inpatients in 1912 was: 55 (44 men and 11 women). G.P. with 17.5% of all admissions ranged third (maniac depressive psychosis 40%, dementia praecox 20%). 30 patients (55%) died, 19 remained unchanged, 5 had remissions and only one has been declared improved. A very unsatisfactory result if we compare it with our recent home statistics. The patients were between 31 and 63 years old, the average age was 43. A great part of the patients came from the neighbourhood, Hong Kong, the Philippines and Malay States. Some had contracted the syphilitic infection in the maritime service and Hoffman therefore holds the opinion that G.P. is rare amongst the natives of South China. Harvey gives a short description of 12 cases—among these one woman—of the same institution in 1918/19. The average age of these patients was 45 years with 32 and 59 as extreme limits.

The following data showing the frequency of the disease are taken from the hospital reports of the Kerr institution.

Years	1915		1916		1917		1918		1919		1920		1921		1924		1925	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		
—																		
males	70	33	34	21	22	7	32	14	32	13	33	5	41	15	48	—	51	15
females	—		3	1	5	1	8	5	4	2	4	4	8	5	18	—	6	2
Total	70	33	37	22	27	8	40	19	36	15	37	9	49	20	66	—	57	17

Of all mental diseases in these years G.P. comes third in frequency, but has the highest mortality. Unfortunately there are no details with regard to infection and previous treatment in the reports; serological examinations are also missing.

Although the P.U.M.C. hospital does not admit mental cases I was able to find 29 paralytic Chinese among our outpatients. Inasmuch as these cases represent only the quiet forms and basing on my impressions of a very superficial visit to the government asylum I am certain that this number is much below the real morbidity. I therefore do not quote any statistics from other countries for comparison. The number of cases which I observed during three years were:

in 1922/23	1923/24	1924/25
10 men	7 men	9 men and 3 women = 12

Of the total of 29 patients, 7 were from 31 to 40 years old, over half of them, namely 17 from 41 to 50, and 4 over 50 years of age at the onset of the disease. The youngest was 33, the oldest 56 years. The women were 35, 42 and 49 years old. As far as I was able to follow up the cases I heard of only 2 who have since died.

In 16 cases data with regard to the infection could be obtained, either from the patient himself or from his relatives. In one case the infection dated 8 years back from the outbreak of the first symptoms, in all other cases the interval was between 10 and 20 years. As far as could be found out none of the patients had been abroad, most of them were permanent residents of Peking and had been infected by "low class prostitutes". 3 patients had noticed a skin rash, 5 had been treated with salvarsan and 4 with mercury.

As is shown in table 8 the classes most affected by the disease are the brain workers and educated people.

Table 8.

Officials and secretaries	9	Engineers	2
Merchants	4	Officers	2
Bankers	3	Servants	2
Housewives	3	Veterinary surgeon	1
Teachers	2	Chemist	1

—
29

As already mentioned only patients in the quiet stage came to the hospital, 9 of them among which 2 women, could even be admitted into the general ward for a short period.

The clinical picture of G.P. in China is the same as elsewhere in the world, and the ideas of grandeur are not less

phantastic than in our patients at home. The Chinese paralytic has also many millions of dollars, owns thousands of motor cars, houses or concubines, his eyes can see as far as 3,000 miles, his ears can hear at a distance of 200 miles, he is the emperor or president of the republic. A woman thinks she is a star gliding down from heaven to earth, she is almighty, can write beautifully, she will buy a theatre and sing and dance and thus earn 50,000 dollars a day. She loses her shyness towards the foreign doctor, (vide fig 4) formerly so deeply rooted in the Chinese woman, she takes his arm, offers herself as concubine, writes poetical love letters, decorates her hair with paper flowers (vide fig 5) and paints her face with any amount of colours.

Most of the cases showed moderate mental irritability, marked euphoria or depression with more or less advanced dementia. Paralytic attacks of any serious nature were absent in the history of my patients.

Also the somatic symptoms were the same as in other countries. On account of the artistic way of writing disturbances of calligraphy will show even earlier than in western writing. Changes in speaking,—anarthria, blurred indistinct, slow monotonous speech—often were among the first symptoms which were noticed by the family or even by the patient himself.

Eye symptoms—*anisocoria* and loss of light reaction—were found in all but 4 cases. The tendon reflexes were absent in 7, slightly increased in 6 patients, in the rest either normal or slightly diminished. The skin reflexes were mostly normal. 9 patients suffered from incontinence of urine.

In 19 cases the blood and liquor *WaR* proved positive, 4 patients with a positive *B WaR* had refused the lumbar puncture; in 3 cases with a positive spinal fluid the *B WaR* turned out doubtfully, once the *B WaR* was positive and the *L WaR* negative and finally 2 patients were opposed to any puncture whatever. The cell content in the spinal fluid was from 20 to 40 on the average and the protein increased to 1-1.5 mg., the colloidal gold and mastix tests regularly showed the typical paralytic curves. Of all forms of Syphilis of the C.N.S. in G.P. the reactions of the blood and spinal fluid were most constantly found positive.

One case is interesting for its way of onset: in a woman the first symptoms—increased irritability and illusions—developed during a course of radium treatment on account of carcinoma of uterus. Rapidly a stage of excitation of long duration followed; the serological findings proved typical for G.P.

With regard to treatment I had quite satisfactory results with the inoculation with malaria in 4 cases, the psychical con-

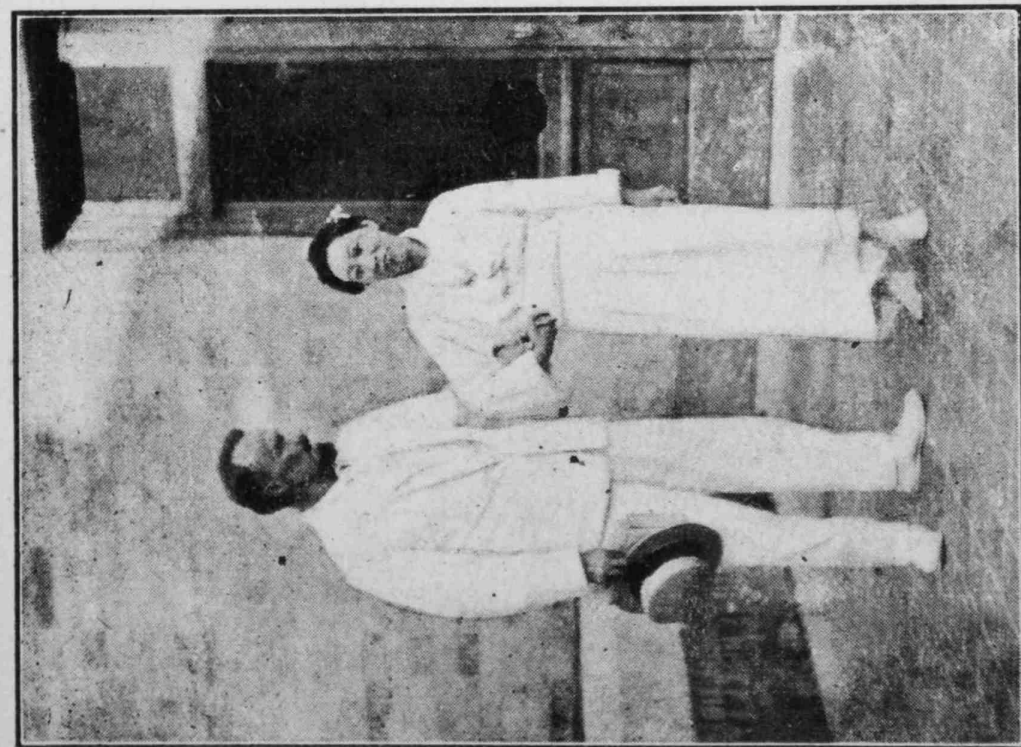


Figure 4.
GENERAL PAREISIS.
Wants to hang on the doctor's arm.



Figure 5.
GENERAL PAREISIS.
Note the artificial flowers in her hair, made from handkerchiefs and other articles of her clothing; also the brooch and scarf (a towel)—signs of her vanity.

dition improved in all of them, the patients became more quiet and reasonable, but the dementia had not essentially changed. 2 to 4 cc of blood are withdrawn from a malaria patient with positive findings of plasmodia and immediately injected subcutaneously into the paralytic. I usually allowed the fever to go on for 10 to 14 days according to the somatic condition of the patient. In the later part of the course it is advisable to give heart stimulants (digitalis preferably), to avoid too great an exhaustion. The fever is easily checked usually with one dose of salvarsan. (0.6). The good result which we had with the malaria treatment is well demonstrated by the following incident. A woman had heard of the new method and had brought her paralytic husband into the hospital for treatment, but to make sure of a thorough effect she had brought with her 3 patients with flourishing malaria which she had collected among her friends and relatives. One case I treated with the organisms of relapsing fever with the same or even better result. As the fever in inoculation malaria can always be easily controlled and since in this country there is no difficulty in obtaining material for inoculation malaria treatment in G.P. should become the therapy of choice.

In summarising my experiences I feel justified to say that syphilis in China is at least as frequent but probably still more common than in western countries and further that all forms of syphilis of the C.N.S., at least in the region of Peking are as often met with as in the more civilised parts of Europe or America.

Of course we are not allowed to conclude out of the morbidity experienced in one large hospital that in the other parts of the country, the disease is equally frequent, but as in the great cities of eastern China similar conditions prevail, it seems to me not very likely that essential differences in the frequency of syphilis of the C.N.S. would be found between Peking and other parts of the East. The fact that until now no other hospital except Peking and Canton has reported a similar high frequency as I had observed is in my opinion solely due to the lack of interest of the medical men and experience in neurological diseases. Where special institutions for nervous and mental cases have been established, there at once such patients appear and further where the opportunity is given with the facilities of a modernly equipped laboratory to ascertain the syphilitic nature of a disease, there such cases will be found to be unexpectedly frequent and this at a time when tabes and G.P. from other parts of the country are reported as practically not existing.

It is not likely that G.P. since 10 years rather stationary in Canton, has only prevailed in this region, for as soon as the P.U.M.C. had begun its activities, not only G.P. but all other forms of syphilis of the C.N.S. were observed in Peking and to such an extent that they seem to pre-

vail more frequently than in western countries. According to Lennox the incidents of neurosyphilis in Peking 6 years ago compared with the total admissions were the same as those in three large American hospitals.

The reason why only a few years later I found nearly five times as many cases as Lennox did, can certainly not be attributed to a rapid increase of the disease after such a short period. It is to be regretted that reliable reports on neurosyphilis in former times are lacking especially from countries where western influence has existed for more than 25 years and where now these diseases are frequent. It is reported from Japan that some 30 years ago, when similar conditions as they are still in China existed, tabes and G. P. were practically unknown, whereas now both diseases are rather common. The example of China demonstrates, as I have previously shown, that still now a considerable number of physicians, even those working in large hospitals, has never seen a case of neurosyphilis and therefore declares the disease as not existing in a country or part of it, where it has been observed by others. **Therefore negative reports from former times when medical knowledge in the East was not of a high standard can not be considered as reliable enough to prove with certainty the absence of a disease.**

Similar difficulties arise at the question if in western China where the civilisation has made less progress but where the syphilitation has probably not less pervaded the population than in the eastern parts, neurosyphilis is as frequent as in the coast districts. The answers which I have received on my questionnaires were more or less all in the negative, tabes and G.P. had not been found present. But unless a thorough search by a well trained neurologist is made in those countries the present reports can not be considered as established facts.

In discussing the possible influence of the salvarsan treatment on the involvement of the nervous system we have to realize that in China the period since this drug has come into practice is too short to demonstrate any provoking effect. In spite of an already numerous literature on the subject no proof has up till now been brought forward that tabes and G.P. have become more frequent since the era of salvarsan treatment.

The surprisingly large number of neurorecidives,—a practically unknown affection before,—which I have observed in Peking and in most cases was able to trace to a more or less imperfect treatment with salvarsan in the early secondary stage of the disease, suggests that this treatment has in some way to be held responsible for the involvement of the nervous system. Probably the processes of immunisation in the organism are somehow disturbed by the specific treatment and the virus is chased into parts of the body less accessible for the penetrating power of the remedy i.e.: the C.N.S.

Our present method of treating syphilis is not absolutely satisfactory, we even do not know yet the exact meaning of the Wassermann reaction. Is it an indicator for the pathological process itself or the expression of a defence reaction of the organism?

Is it therefore wise to treat a patient extensively who has no other symptoms except a positive WaR or do we more harm by preventing the organism from producing antibodies and thus keeping it from successfully overcoming the disease by its own allergic means. It is not simply the question of a chemical reaction between a germ killing drug and the spirochaete, but our success of treatment depends a good deal on the active co-operation of the organism itself.

The recently acquired knowledge that the skin takes an important part in the protection of the inner organs surely will cause us to revise our views with regard to the principles of the treatment of syphilis. Many questions still wait for a definite solution. **But for the present we ought to pay more attention to the possibility of provoking by the treatment a reaction from the part of the nervous system.** This especially holds good for the sort of reckless use of salvarsan still in vogue in China.

As in the case of the neurorecidives it seems to me more than probable that also other forms of early stages of syphilis of the C.N.S. especially the spastic spinal paralysis, which has been so frequently observed in Peking, may be provoked in their development by the treatment with salvarsan, which in a higher degree than other drugs, previously used, may produce this effect either by increasing the affinity of the virus to the C.N.S. or by disturbing the natural processes of defence in the body, especially by interfering with the allergic relations between nervous system and other parts of the body and chiefly again of the skin.

Degrees of infection, course of the disease and time of onset of the treatment as well as innate or acquired constitutional dispositions or weakening external influences are other factors which in manifold combinations have to be considered in the etiology and development of the various pathological pictures and which at the same time may also give rise to the formations of biological variations of the spirochaete. At this point it may be mentioned that the symptoms of reaction after the endolumbar application of salvarsan — slight spastic paresis and retention of urine—entirely correspond to the picture of the spinal spastic paralysis.

The view that the Chinese as a race are less susceptible to neurosyphilis can no longer be maintained since the frequency of the disease has been demonstrated at least for one part of the country. The prevalence of G.P. in Canton proves that also the

hot climate does not protect from neurosyphilis, but considering the good effect of the inoculation with malaria the frequency of the latter disease may be to a certain extent act in a preventative way in these countries. Statistics on the prevalence of neurosyphilis in the south would be very welcome.

Further influences of western civilisation have been held responsible for the development of neurosyphilis. In which way and to what extent such influences have been acting in China it is difficult to decide. At first it has clearly to be stated what kinds of influences have to be considered as provoking agents. China certainly is a country of old culture and the number of scholars and brain workers has been great for many centuries, in strenuous mental and physical work the dense population has since long fought the hard battle for existence. The western civilisation has not brought any essential change into the daily life of the great mass. On the other hand in the way of hygiene and physical culture most of the people live still far behind what is considered a healthy life. The poor people who represent a great part of the population are underfed, the well-to-do classes lack physical exercise, both have little resistance against disease. The abuse of alcohol does not play the important role as it does in western countries but opium smoking is still much practised all over the country.

Altogether the factors which are considered to be of importance in the etiology of neurosyphilis are very much the same in China as in western countries.

Although my work has extended only upon observations concerning a small locality it suffices to prove that the view still held by many medical men of the rarity or even absence of neurosyphilis in China cannot be maintained any longer, and that on the contrary at least in some districts all forms of syphilis of the C.N.S., known in western countries are as frequently if not more frequently found in China.

Author's Additional Note.

In a recent article on the incidence of syphilis at the Shantung Christian University Hospital Heimburger finds the incidence of involvement of the C.N.S. in China very low, about one-third of the frequency in the West.

The usual explanation given for this rarer occurrence that the central nervous system of the Chinese is not as susceptible to the syphilitic virus, or the theory of the prevalence of the dermatropic strain in China seems not quite to satisfy the author for he believes that a more frequent use of the Wassermann test would probably show that many cases with "obscure symptoms," especially of the nervous system, may be syphilitic in character.

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STRICTURES OF THE VAGINA AMONG THE CHINESE.

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Operations undertaken for the cure of vesico-vaginal fistulae are frequently rendered exceedingly difficult by the masses of scar tissue which have developed round the seat of the injury. Apart from these cases however the formation of scar tissue of sufficient density to lead to the partial, or total occlusion of the vagina must be comparatively rare, particularly among women delivered under modern conditions. In most of the Chinese villages round Hong Kong the services of a trained midwife is obtainable, that is, if the patients' relatives have sufficient faith in modern methods to send for her. The total population of the Colony in 1926 was 786,920, but I am afraid that the masses of its women are delivered under the most primitive conditions. To judge from my limited experience, the patients, if they will not or cannot engage midwives, would perhaps be better without the attentions of the native untrained 'handiwomen'; no doubt, as in one case I am reporting, the latter sometimes succeed in extracting a child piecemeal, that would not otherwise be delivered, but one cannot expect them to know when the indications for immediate delivery are fulfilled.

In discussing its causation of this condition, Lusk wrote as follows:—"Accidental vaginal atresia may be either complete or partial, but it is ordinarily of the latter form. Both varieties result from the cicatrization following superficial or deep ulceration produced by constitutional diseases or local injury. The diseases during the course of which vaginal ulceration occurs are chiefly diphtheria, variola, typhoid fever, cholera asiatica, and syphilis. The mechanical injuries productive of vaginal stenosis are mainly those incident to protracted labours, to the unskilled employment of instruments, or the improper performance of obstetrical operations; but caustic local applications, pessaries, excessive coition, or any local irritant of sufficient intensity to produce ulceration, may lead to the same result. In consequence of impaired vitality, ulceration and stenosis of the vagina may follow normal labours unattended by any injurious pressure. Complete accidental vaginal atresias are produced, as a rule, by grave mechanical injuries, but may, according to Spiegelberg, also follow the acute infectious diseases enumerated above, although the ulcerations attending the latter usually lead only to partial stenosis."

In the cases which I am reporting the stricture appears to be definitely traceable to a confinement, with the possible excep-

tion of the patient who died of cancer, whose history was rather vague. Patients are asked if they have applied any native remedy to the perineum, or vagina after labour, but so far all the replies have been in the negative, although I have been told that there is a drug used in the treatment of vaginal lacerations.

The symptoms which may be caused by a stricture of the vagina appear to differ, according to the locality, size of the opening, and according to whether the parts are tender, or not.

Most of the patients complain of sterility, or have had long periods of sterility, due to dyspareunia; dysmenorrhoea may be complained of.

The strictures are usually dense, and prove, or would prove a real obstruction to the advancement of the foetal head in labour.

Case 1.

* C.C. aged 36, second pregnancy; the first pregnancy thirteen years previously was difficult, resulting in a dead foetus; she was sterile during the interval. She first presented herself for examination when pregnant about 34 weeks, it was then found that at the junction of the lower and middle thirds of the vagina there was a dense stricture which just admitted the tip of the index finger. Owing to the density of the stricture internal pelvimetry could not be performed, but her history and external measurements afforded presumptive evidence of the existence of a slight degree of pelvic contraction. On a selected date conservative classical caesarean section was performed, the indications being as follows:—age 36, no living children, probable pelvic contraction, dense stricture of vagina.

Result mother recovered, child alive.

I may take this opportunity of mentioning that at the Tsan Yuk Hospital during the last two years, this was the only caesarean section performed (total confinement annually about 600). While during the same period at the Maternity Bungalow of the Government Civil Hospital approximately 1,000 cases were delivered without this operation having been performed once.

Case 2.

L. H. S. age 37, second pregnancy, in labour.

The progress of the child's head was obstructed by a moderately dense stricture, situated at the vaginal outlet. Delivery was effected by forceps, a complete tear of the perinaeum resulting, child alive, Wassermann negative.

Case 3.

F. age 31, married 11 years, two children (stillborn), no miscarriages, last pregnancy three years ago.

Symptoms: Dyspareunia and leucorrhoea.

* Reported in the British Medical Journal.

Physical signs: Length of vagina 1 inch, in the vault there was a small opening probably continuous with the cervical canal. Uterus small and vertical in position. Stricture appears to have resulted from the last delivery but no history of an abnormal confinement was obtained. Patient refused hospital treatment.

Case 4.

C. K. age 26, one child, no miscarriages, last pregnancy two months before admission.

Symptoms: Incontinence of urine since delivery.

Physical signs: The interior of the bladder wall could be seen protruding into the upper part of the vagina in the form of a cherry like mass; the vagina was occluded in its upper third by a complete stricture, as the patient had been so recently pregnant there were no symptoms due to the occlusion of menstrual blood; complete tear of perinaeum.

Treatment: This case was seen by the Professor of Surgery and myself, and we were both of the opinion that it would be unwise to attempt to restore the lumen of the vagina. Hysterectomy was therefore performed, and an attempt made to close the fistula, the latter proved unsatisfactory, and patient was told to return to hospital in two months time.

Case 5.

L. M. age 38, one child, ten years ago.

History of a difficult confinement, child delivered dead by the aid of a common metal hook, such as is attached to a balance for weighing things.

Complained of Dysmenorrhoea only, she is a widow.

Physical signs: Old stricture situated at the junction of the lower and middle third of the vagina, opening size of a match, uterus retroverted.

Treatment: Stricture dilated by Hegar's dilators, and sea tangle tents; hysterectomy refused.

Case 6.

T.K. age 31, one child (stillborn), last pregnancy five years ago.

History of perineal laceration during delivery, but patient was definite that no Chinese native medicine had been applied to the parts.

Complained of sterility, and inability to perform coitus.

Physical signs: Stricture of moderate density in the lower third of vagina.

Treatment: Stricture was incised and opening dilated. Patient was seen six weeks after operation, when her condition appeared to be satisfactory.

Case 7.

T. Y. age 58, one child, 37 years ago.

Complained of pain in the lower abdomen for four months. Pain in the vagina, and on defecation and micturition for the last two months; last menstruation 14 years ago.

Physical signs: Complete stricture of the vagina, on rectal examination the uterus was found to be enlarged to the size of a five months' pregnancy, and very soft, some thickening in the region of the cervix.

Treatment: Exploratory laparotomy, uterus appeared free, and was drawn up into the wound by a single toothed volsellum, as soon as the latter was applied it was realised that the size of the uterus was due to a condition analogous to haematometra, for a thick reddish brown fluid escaped under considerable pressure through the holes the volsellum had made, the cervix was found to be fixed.

Diagnosis: Cancer of the cervix, inoperable.

Post Mortem Report: Cervix and bladder necrotic, portion of cervix removed for section proved to be carcinomatous. One kidney fibrotic, the other showed multiple abscesses. Pelvic peritonitis. Wassermann negative.

Cases of cancer of the cervix where the blood cannot escape per vaginam, and in consequence regurgitates into the uterus must be of considerable rarity. When the patient was first seen there was some little difficulty in making a diagnosis owing to the stricture of the vagina suggesting that the fixity of the cervix was due to scar tissue; by rectal examination it was apparent that there was something in the nature of a new growth in the lower part of the uterus, but that the enlargement of the body of the uterus was not part of the tumour was not apparent until the abdomen was opened.

The stricture situated in the lower third of the vagina was in the first instance probably traumatic in origin, the extension downwards of the carcinoma may have been responsible for its complete closure. The patient lived about two months after the operation.

Unfortunately the treatment of cases of stricture of the vagina does not seem to be very satisfactory. If the stricture is dense and obstructing delivery, unless it be at the outlet, Caesarean Section is probably the best operation to perform. If an attempt be made to incise the stricture and deliver the head through it, very extensive lacerations may occur. It should also be born in mind that pregnancy is not a common occurrence in these cases, and consequently there is not the same objection to a uterine scar that there would be in a young woman of normal fertility. When the stricture is at or near the outlet, then the head can probably be delivered through the opening, if necessary an episiotomy can be performed in order to control the direction of the tears.

In 1885, Lusk discussed the question as follows.—“Atresia for the most part require to be treated each by itself, according to the principles of surgical art. In a paper by Professor I. E. Taylor in the fourth volume of the ‘Transactions of the American Gynaecological Society’, entitled “Atresia of the Vagina, Congenital or Accidental, in the Pregnant or Non-pregnant Female”, the author related a case of seemingly complete imperforation of the vagina complicating labour, where he succeeded, by

scraping with the finger-nail during the pains in passing the index finger through the intervening membrane to the child's head, and eventually in securing an opening large enough for the birth to be accomplished; I had previously reported two similar cases, one in the *New York Medical Journal*, and one to the *Obstetrical Society*.

The first, where I was aided by Professor Fordyce Barker, occurred in Bellevue Hospital, and the second in private practice. In both, similar success followed a gradual dissection of the vaginal walls with the finger. In such cases usually a depression, or thinned point in the tissues, indicated the direction to be followed. C. Braun states, however, that he has seen three cases where vesico-vaginal fistulae were produced by this tunnelling process, an admission to extreme caution in its performance. For stenoses of the vagina, dilation should be employed, either by means of compressed sponges, the tampon of slippery-elm (Skene), or the water-bag. When dilation is already well advanced, incisions may be used to aid in completing the process".

In our Clinic we have followed Lusk's advice, endeavouring to treat each case on its merits. In dealing with incomplete strictures the opening can be enlarged considerably under an anaesthetic by Hegar's dilators. If sea tangle tents are inserted before the patients leave the operating table, a large opening still may be obtained. In one case we inserted fresh tents daily for three or four days; other cases are better dealt with by incision, closed in the long axis of the vagina.

I wish to acknowledge my indebtedness to Dr. Hickling for her kindness in allowing me to treat such of these cases as occurred in the Tsan Yuk Hospital.



TELLING'S DISEASE (Diverticulitis) *

ALEXANDER CANNON.

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This is a very important disease although little is mentioned concerning it in text-books. However, I append at the close of my paper three hundred and forty-nine references from English, French and German papers, to show that this disease has a place of great prominence. One of the leading articles in the British Medical Journal, February 19th, 1927, on "Diverticulosis and Diverticulitis," says of the meeting held by the Royal Society of Medicine; "its immediate result was that diverticulitis ceased to be known merely as a sort of occasional by-product of the operating theatre, and post mortem table, but earned for itself a place in scientific medicine, with well defined symptomatology and pathology." To further this point, I put forward a scheme to link up the anatomy of the diverticulum with its secondary pathology and resulting clinical manifestations, and this is enforced by the radiological demonstrations which my colleague, Dr. C. W. McKenny, will presently show you.

Diverticula are usually pulsion diverticula and not congenital. I will explain this later on. My object to-day is to eliminate all complex, "high-brow" explanations, and to give you a simple, clear, and lucid idea of this medical and surgical condition, so that it will be a comparative easy matter for you to diagnose this condition in man, when presented to you in its various forms.

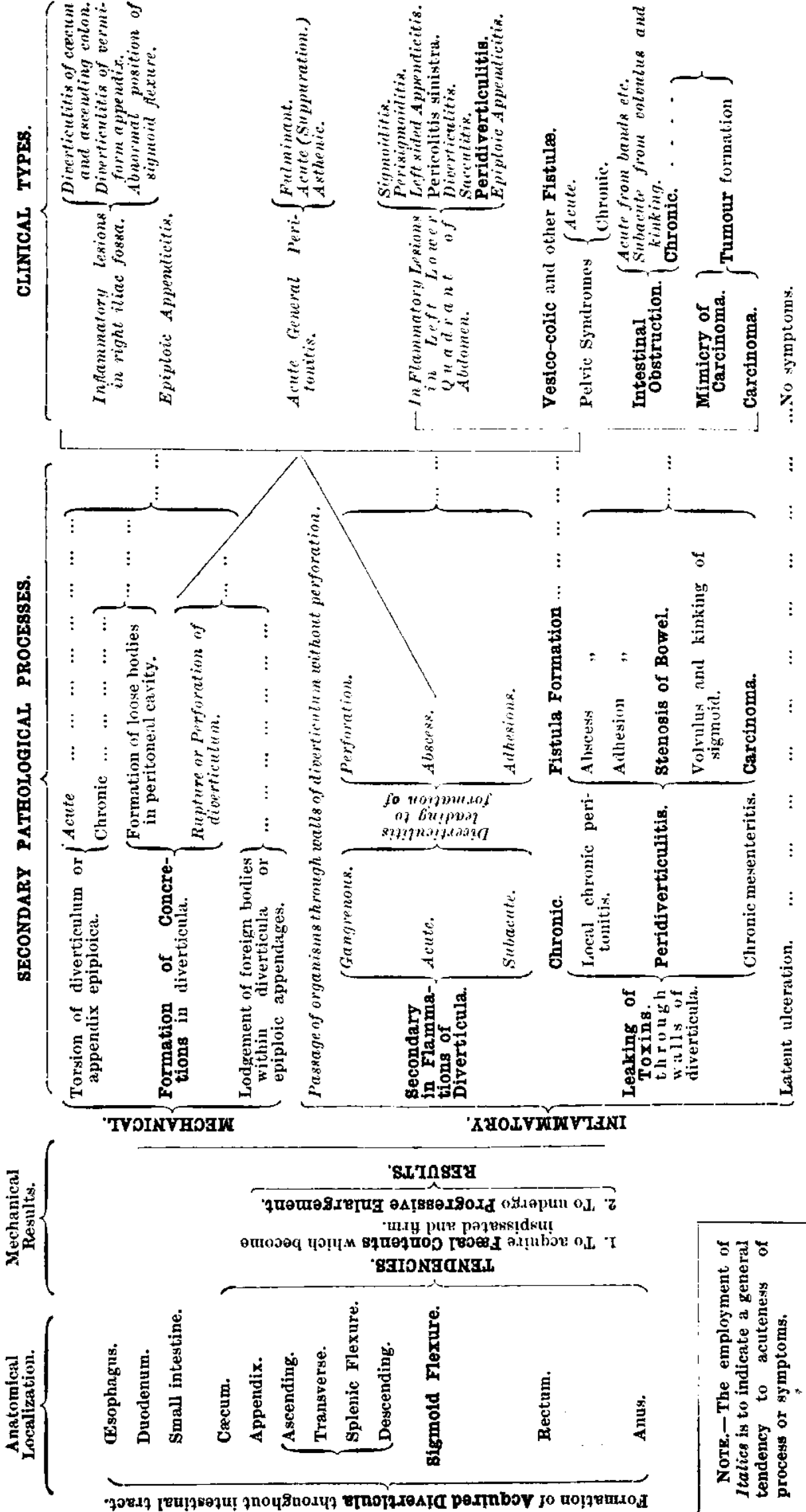
An analysis of the leading clinical features is as follows:—

Acute intestinal obstruction	7%
Chronic intestinal obstruction	8%
State of Nutrition	
Obese	65%
Thin	15%
Losing weight	20%
Unspecified	65%
State of Bowels	
Constipation	30%
No constipation	1%
Diarrhoea	3%
Left sided tumour	30%
Left sided pain	12%

* Delivered before the Hong Kong University Medical Society on 30th March, 1927.

DR. TELLING'S - - - - SCHEMA. - - - - SIR BERKELEY MOYNIHAN'S - - - - CLASSIFICATION.

TO LINK UP THE ANATOMY OF THE DIVERTICULUM WITH ITS SECONDARY PATHOLOGY AND RESULTING CLINICAL MANIFESTATIONS.



NOTE.—The employment of *Italics* is to indicate a general tendency to acuteness of process or symptoms.

Right sided cases	5%
Arteriosclerosis noted	3%
Local peritonitis	5%
Chronic mesenteritis	5%
Stenosis of bowel	15%
Thickening of bowel without stenosis	25%
Adhesions	40%
Non-perforating acute diverticulitis	5%
Perforating cases	6%
Suppurative peritonitis	20%
Abscess	30%
Fistula formation	20%

Dr. Maxwell Telling, who is now Professor of Medicine in the University of Leeds, during his tenure of office as Professor of Therapeutics, brought to our notice in a very simple, though forceful, and impressive manner the full details of the Disease, now known by his name, and technically known as "Acute Diverticulitis."

This disease is tabulated as such under "synonyms" in Leftwich's "Index of Symptoms with Diagnostic Methods," although it is now not so strictly limited, and for practical purposes includes Acute, Sub-acute, and Chronic Diverticulitis.

Telling himself suffered from this disease, and by carefully comparing his symptoms with those others who were less fortunate than himself, and repeatedly carrying out careful post-mortem examinations on the intestines and colons of these cases, one day, some years ago, discovered this special pathological condition of the colon, and the diverticula which are very frequently found.

The term "Diverticulitis" is generally reserved for the inflammatory conditions which develop in connection with "Diverticula" of the colon. Diverticula are found in all parts of the large intestine.

They are very rare in the ascending colon and are found with steadily increasing frequency in the transverse colon, the descending colon, and the sigmoid flexure or (pelvic colon), and are extremely rare in the rectum. The question now arises as to what is the "Diverticulum."

The definition given by Professor Sir Berkerley Moynihan, Bt., President of the Royal College of Surgeons, England, and Emeritus Professor of Surgery in the University of Leeds is the simplest and best. He states: "A Diverticulum is a wayside track from a main path."

In the alimentary canal it is due to a protrusion of mucous membrane with or without the other coats from the lumen of the bowel. The extrusion of the wall of the intestine is an essential step in the formation of several of the organs whose processes are associated with, or essential to, the work carried on in the digestive track.

The liver and pancreas arise as buds from the intestinal wall, but not all the little pouches which spring from the mucosa have the full development. We may discover the following different degrees.

1. The Diverticulum may develop in foetal life and proceed on its normal career, and lead to the growth of:—

- (a) The liver and pancreas whose **connection** is maintained with the alimentary canal **through their ducts**.
- (b) The appendix, whose **connection, through its whole length**, is fully maintained, there being no differentiation into a duct.
- (c) The thyroid gland, the lumen of the protrusion, from which a large part of this gland develops **does not go deep into the solid bud** which consists of cells forming the thyroglossal tract.
The **foremen caecum** on the dorsum of the tongue is the **only patent part of the Diverticulum**.

2. The Diverticulum may develop normally in foetal life, but its connection with the mucosa in the adult may remain only in curtailed condition, or it may finally disappear.

- (a) The Diverticulum of Meckel found in the lower part of the ileum is the unclosed part of the amphalo mesenteric duct.
- (b) The Pouch of Rathke in the naso-pharynx seen in early infancy vanishes as a rule completely in the course of a few years.

3. The Diverticulum may develop and in normal circumstances disappear in foetal life. In a few instances this normal atrophy and disappearance may not take place, and a Diverticulum is found in the adult.

Lewis and Thyng, (American Journal of Anatomy, 1907/8, Vol. vii, page 505), have shown that Diverticula from the stomach duodenum and jejunum are frequently found in foetal life. and at their tip little solid masses of cells are seen identical with the cells are seen identical with the cells from which the pancreas grows. These cells normally wither, and are absorbed.

It would seem as though a whole series of efforts were made to develop the pancreas, only those connected with the ducts of Wirsung and Santorini surviving. The others are there in case of mischance.

In a few cases the normal disappearance does not occur, and gastric, duodenal, or jejunal, buds with an accessory pancreas attached to each may persist into adult life.

Various forms of Diverticulum occur, and may be classified in this way:—

- (a) A Diverticulum which arises as a bud from the wall of the intestine during development will contain **all the coats of the bowel** at that point. It is said to be "**CONGENITAL**" in origin, and "**TRUE**" in structure.
- (b) A Diverticulum which occurs after development is complete, and is due to some abnormal process, will be found to contain, as a rule, **only the mucous coat**, with or without an adventitious fibrous layer. In no case does it display all the intestinal coats. It is "**ACQUIRED**" in origin, and "**FALSE**" in structure.
- (c) An Acquired Diverticulum may be caused by the **pushing out** of the mucosa from the lumen, owing to increased intestinal pressure, or it may be **dragged out** from the wall by the adhesion of some firm structure to the outer side of the bowel. In the former case it is a "**PULSION DIVERTICULUM**," in the latter a "**TRACTION DIVERTICULUM**."

A Diverticulum caused by the traction of an adherent structure to the outer side of the alimentary canal, as for example, into the esophagus, may enlarge because of the pressure of increasing quantities of retained substance within its cavity.

Beginning as a traction Diverticulum, its enlargement is due to conditions similar to those which create and enlarge a Pulsion Diverticulum. A third form of Diverticulum, the "**Traction-Pulsion**" Diverticulum may therefore be described.

PATHOLOGY.

The following are the changes which may occur:—

1. **Inflammation** in and around the sac; "**Diverticulitis**" and "**Peridiverticulitis**."
2. **Suppuration.**
3. **Sloughing and Grangrene.**

4. Perforation.

- (a) To the surface.
- (b) To a serous cavity, pleural and peritoneal.
- (c) To another viscus.

5. **Adhesions**, which lead to the compression, and withering of the sac, **Obsolescence**; or in the case of Meckel's Diverticulum adhesions leading in one or other way to **Intestinal Obstruction**.

6. **Development of Carcinoma**.

7. **Rotation of the Sac** when it has grown to such a size as to develop a "neck" or "pedicle." This rotation together with the pressure of the distended sac causing **Obstruction**.

ANATOMY.

Situation. It is comparatively common in the descending colon and sigmoid flexure and very rarely found in the remaining parts of the colon. It nearly always stops short of the rectum, the latter structure practically never being involved.

The Diverticula bulge out from the outer and inner borders of the gut often projecting into and involving the appendices epiploicae.

Extent. The Diverticula are usually multiple, often reaching 300 and 400 in number.

Their average size is that of an ordinary currant, but they vary from the size of a pinhead to the size of a large marble.

Structure. The Diverticulum consists in a hernial protrusion of mucous membrane through the thinned muscular wall of the Colon. The site of election is where the blood vessels pierce the wall to enter a fat appendix, i.e. an **appendix epiploica**, as here the wall of the gut is most likely to give way to strain.

These diverticula often contain faecal matter which may be inspissated to form a concretion. Occasionally a foreign body lodges therein. It should be borne in mind, that the large intestine consists of four coats from without inwards.

1. **Serous Coat** which is incomplete in the ascending, descending and iliac colon being absent posteriorly. At frequent intervals small projections called appendices epiploicae are seen.

2. **Muscular Coat** composed of plain muscular tissue and disposed in two layers. (A) **External or Longitudinal**.

(B) **Internal or Circular**.



Fig. 269.—Diverticula of sigmoid. The fat has been dissected from the outer aspect of the bowel. The pouches are for the most part into the appendices epiploicæ. *a*, A sac which has been laid open. (Case 82.)



Fig. 270.—Inner surface of the bowel of the specimen show in Fig. 269. *b*, Concretion presenting at the orifice of one of the diverticula; *c*, Lipped orifice of a diverticulum. (case 82.)

3. **Submucous Coat** which is similar in all respects to that of the small intestine.

4. **Mucous Coat** which is pale, and greyish in colour, except in the rectum where it is red. Its epithelium is similar to that of the small intestine and differs in being destitute of valvular conniventes and villi, and hence the smooth surface, and contains large numbers of the crypts or follicles of Lieberkuhn which abound in mucous-secreting goblet cells. It also contains the solitary glands or lymphoid nodules, which are especially prevalent in the veriform appendix and caecum.

Diverticulitis is more commonly found in men than in women. It never occurs before the age of 20 years and is most marked about the age of 60 years. The patients are usually stout. **Constipation is the most important factor in the development of Diverticula.** The diverticula indicate that muscular hypertrophy of the colon is yielding to dilation. They are thus similar to saccules which occur in the bladder of an old man with a large prostate.

Diverticula may occur in any part of the alimentary tract and may be "**Congenital**" or "**Acquired.**"

It will be borne in mind that if "**Acquired**" they are caused by increased pressure from within the gut, (**Pulsion Diverticula**) or by the dragging of a structure adherent to the outer coats of the gut, (**Traction Diverticula**).

The process which takes place in the formation of Diverticula due to these mechanical means is as follows:—the mucosa stretches the muscular coat and finally perforates it as the Diverticulum increases in size.

The shapes of the diverticula vary. Often they have the contour of a flask with long narrow neck and oval cavity. Into the cavity faecal material enters through the tubular neck, and finds difficulty in escaping. As it lodges there in slowly increasing amounts it enlarges its containing cavity, and at last may set up inflammatory changes, i.e. "**Diverticulitis.**"

The following conditions may then develop:—

1. **Attacks of acute or sub-acute inflammation** due to infection of the Diverticulum by its retained and stagnant contents.
2. **Peridiverticulitis.** Inflammation round a number of diverticula results in a large indurated solid mass and the intestinal wall becomes greatly thickened.

3. This inflammatory phlegmon may undergo cicatrization and contraction causing a **stenosis**. In consequence of this obstruction of the intestine, acute or chronic, or acute supervening upon chronic may occur. **Local peritonitis** around the diverticula, in consequence of their deep penetration of the intestinal wall with infection of the peritoneum clothing the outer surface of the gut. This may result in **adhesions**, between the involved intestine and the neighbouring viscus or the abdominal wall. Fistula may form and lead to the small intestine, the bladder or on to the anterior abdominal wall.
4. **Vesico-intestinal fistula** are more frequently due to **diverticulitis** than to any other cause.
5. As the diverticula deepen ulceration may occur at the base of them and in consequence a **perforation** may result. In this way acute peritonitis, sub-acute localized peritonitis, a localized abscess or suppuration as a hernial sac may be caused.
6. **Chronic Mesenteritis** may be caused by the diverticula insinuating themselves between the leaves of the sigmoid mesocolon.
7. **Carcinoma of the colon and of the rectum** may be a result of the chronic irritation of the retained and putrid contents of the diverticula. The clinical conditions resulting from diverticula are sometimes so trivial or so vague, as to cause little anxiety to the patient. The diverticula are then discovered on X-ray examination, when no localizing signs are present.

The following **CLINICAL GROUPS** may be recognised:—

1. **Inflammatory.** In this group the patient suffers from recurring attacks of greater or less severity in which localized pain, tenderness, rigidity, and swelling are present. Temporary intestinal difficulty accompanied by vomiting may be observed. The symptoms are so similar to those caused by inflammation of the appendix, that '**Left-sided Appendicitis**' is spoken of in many instances. In the graver forms an acute peritonitis is found and at the operation a perforated diverticulum is disclosed.
2. **Obstruction.** Chronic intestinal difficulty with periodic attacks of exaggerated difficulty amounting to temporary obstruction is not infrequent and in the severe cases a complete intestinal obstruction may be present.

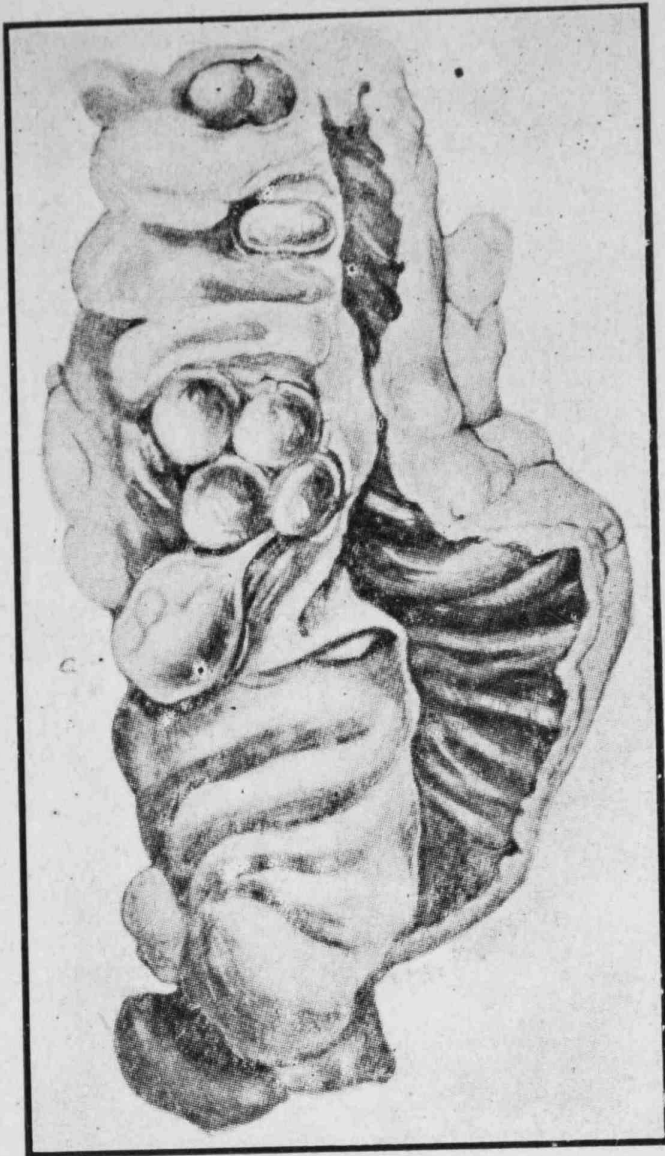


Fig. 284.—Diverticula of sigmoid. The fat has been partly dissected from the outer surface of the gut, showing several pouches. *a*, Large pouch containing a calcareous concretion, with a thin fibrous pedicle in the process of separation to form a loose peritoneal body. A similar concretion the size of a bean was free in the pelvis. (*Case 64*).

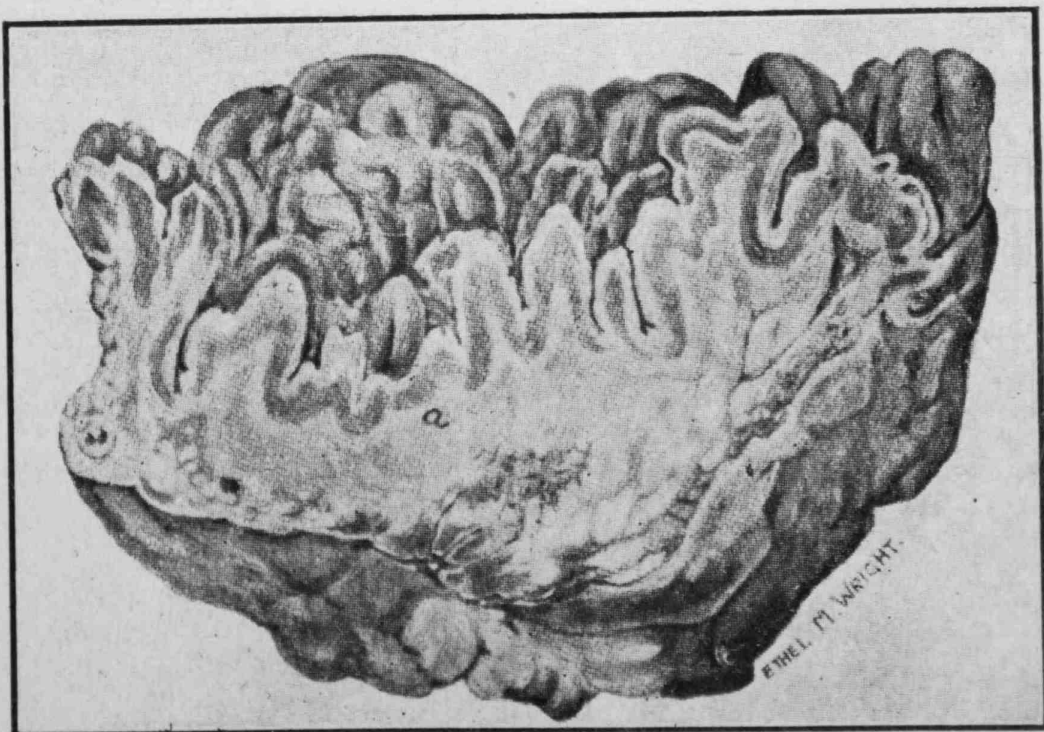


Fig. 285.—Peridiverticulitis, with great thickening of the gut wall, causing stenosis and simulating carcinoma, for which it was mistaken when resected at operation. *a*, Thickening due to fibrosis. (*Case 72*.)

3. **Fistulous.** The passage of faecal matter and air, by the urethra indicates that a communication exists between the intestine and the bladder. The opening may be seen with a cystoscope. The cause almost invariably is a diverticulitis of the sigmoid flexure.
4. **Pelvic.** An inflammatory mass is found in the pelvis and in the female is attributed to diseases of the adnexa.

The symptoms are often very similar to those of SALPINGITIS and PYOSALPINX.

It should be noted what similarity there is between Appendicitis and Diverticulitis, the symptoms in the first being usually more marked and on the right side and in the latter case on the left side. Once formed the colic diverticulum forms a miniature appendix vermiformis and is liable to the same pathological changes.

General Peritonitis from perforation of, or a transudation of bacteria through a diverticulum, when the pouch may be in a condition of gangrenous diverticulitis.

A localized abscess in the left iliac fossa may resemble an appendix abscess.

Proliferative chronic inflammation occurs in the walls of the colon round the diverticulum; in the end this condition converts the gut into a thick, rigid, stenosed tube exactly resembling some forms of scirrhus cancer.

Adhesions to other viscera, especially the small intestine, and bladder may occur; in the former case acute obstruction, and in the latter a vesico-colic fistula probably resulting. A chronic condition may lead to **CARCINOMATOUS FORMATION.**

SYMPTOMS.

These may be absent. Diverticula often occur without causing any symptoms at all. The most noticeable symptoms are any of the following:—

1. **Tumour Formation** in the left iliac fossa which is the result of either a thickened pelvic colon or a matting of adhesions.
2. **Abscess Formation** in the left iliac fossa with the corresponding symptoms.
3. **Chronic Obstruction** occurs in those cases where the colon has been stenosed. Such cases are often regarded as instances of malignant growth.

4. **Acute Peritonitis** which is usually of abrupt onset and its termination is usually fatal.
5. **General Uneasiness** on the left side which is relieved by laxatives or intestinal lubricants.
6. **Pain on micturition** which is most marked on the commencement of the act and more to the left side than the right. This is usually when a diverticulum or diverticula become adherent to the bladder wall.
7. **Spermatorrhoea** said to be due to adhesions between the diverticula and the vesicular seminalis.
8. **Pain in the back**, more marked just to the left of the vertebral column, about the level of the third lumbar vertebra.
9. **"Stitch" in the side** due to temporary acute inflammation of the diverticula and temporary kinking of the colon due to this sudden state of affairs.
10. **"Worm Sensation:"** a feeling as if a worm was inside and moving about, and gnawing at a particular spot. This often occurs when adhesions or ulcerated diverticula are progressing.

DIAGNOSIS.

The character of the symptoms or the presence of tumour and the age of the patient, make the diagnosis probable. A RADIOLOGICAL EXAMINATION MAKES THE DIAGNOSIS CERTAIN.

Differential Diagnosis: In cases where the tumour has formed there may be the greatest difficulty in distinguishing between carcinoma and diverticulitis. In carcinoma, haemorrhage occurs more frequently than in diverticulitis and the discharge of mucous is more abundant. Consider also:—

- (a) Sigmoiditis
- (b) Hyperplastic tuberculosis.
- (c) Actinomycosis.
- (d) Syphilis.
- (e) Pelvic conditions generally.

The duration of intestinal difficulty in cases of diverticulitis may extend over many years, the disease often progressing very slowly. PELVIC CONDITIONS IN THE FEMALE MAY CLOSELY RESEMBLE DIVERTICULITIS BUT AN X-RAY EXAMINATION MAKES THE DIAGNOSIS OBVIOUS.



Fig. 202.—X-ray photograph to show several shadows thrown by diverticula of the sigmoid after barium injection. (*Case 31.*)

I herewith append clinical notes of twelve cases:—

- Case 1.** (Kohn 1924). An old man, supposed to have appendicitis. Operation showed **HUNDREDS OF DIVERTICULA**, varying from a pin's head in size to that of a marble. One situated on the **TRANSVERSE COLON** had perforated.
- Case 2.** (Kohn 1914). Male aged 67. Symptoms of chronic obstruction. Pain and tenderness in the left side of the abdomen. **Attack of obstruction for four years.** There was a mass on the left lower quadrant which proved to be adherent to the bladder and the pelvic brim. The wall of the sigmoid was very thick and **numerous diverticula** was found, varying in size. The stenosed portion was thickened. The cases resolved for a time with high enemas. He lived for six years after operation thus proving that it was not a case of cancer. Death occurred subsequently from oedema of the larynx.
- Case 3.** (Lilienthal 1910) Male 45. There was a **FEBRILE ILLNESS FOR WEEKS.** Then the abdomen became suddenly distended, especially in the left iliac fossa. A hard mass adherent to the abdominal wall was found. There was a small abscess between the omentum and sigmoid. There were **two inflamed diverticula**, one communicating with an abscess, other diverticula occurred which were not inflamed.
- Case 4.** (Richardson, quoted by Graves 1911) Male 70. Pain in the epigastrium for two days and then in the right iliac fossa, with tenderness. Leucocytosis 17,000. Rectal examination showed a resistant tender **tumour at right pelvic brim.** Operation showed pus and faeces in the pelvis. A partly gangrenous epiploic appendage, the size of a plum, was found adherent to rectum and small intestine. Its cavity opened into the bowel.
- Case 5.** (Richardson quoted by Graves 1911) Male 52 years. Symptoms of fistula between bladder and intestine. There has been **ATTACKS OF SUDDEN FEVER FOR SIX YEARS.** Eighteen months ago there was a very sudden pain in the bladder. X-rays showed no evidence of vesical calculus at that time. Operation revealed a thick infiltrated rectum. One diverticulum was resected. Another was not inflamed. Death six months later. There was a **fistula into the bladder**, a small abscess cavity being present in the adhesions between the two viscera; there were two holes into the rectum and one into the bladder.

- Case 6.** (Ebner 1909) Male 65. Nutrition bad. The illness began suddenly while **lifting sacks of grain**. There was slight pyrexia, increasing constipation, and frequent vomiting. The Abdomen was markedly tender. Laparotomy showed a twisted omental mass. The intestinal walls were notably paresed. **Pea-sized diverticula were found along the whole length of the sigmoid.** There was a sinus running in the walls of the bowel, growing at one spot into an abscess, in another with a perforated diverticulum. Death occurred rapidly.
- Case 7.** (Ewald 1912) Male 60. Taken ill with a sudden rigor fourteen days before. **RIGORS OCCURRED, THE ILLNESS SIMULATING MALARIA.** There was 2% glycosuria and seven grammes of albumin per litre of urine, the amount rapidly falling to zero. The patient was too ill to justify operation and he died in three weeks. **Numerous diverticula were found, as well as a large abscess round the colon, extending up to the spleen and diaphragm, and involving the pancreas.** He was a chronic sufferer from gout.
- Case 8.** (Anschutz 1900) Male 23. Had an attack like appendicitis in March, another in May, and a third and very severe one in June. Previous health good. Operation showed a tumour in the sigmoid, which proved on **microscopic** examination to be a diverticulum. One had perforated.
- Case 9.** (Albertin 1912) Female 39. A chronic sufferer from abdominal pain and digestive trouble. Present attack presents very acute lumbar pain, worse at night, colic, occasional vomiting. Vaginal examination showed a **large mass in the left fornix** hardly distinguishable from the uterus. The mass was tender. Operation revealed a very fat sigmoid with fat epiploic appendages, and much congestion. A very large diverticulum was found just about to perforate. Recovery.
- Case 10.** (Moynihan 1906). Male 52. Chronic constipation Symptoms of chronic duodenal ulcer. **RECURRENT INTESTINAL OBSTRUCTION, COMPLETE ON THIRD ATTACK,** led to supplementary diagnosis of carcinoma of the large bowel. A mass felt in the sigmoid flexure adhered to coils of intestine and the abdominal wall; five inches of gut excised. Great thickening to the extent of one and half inches, of a piece of gut due to cicatricial connective tissue causing stenosis. The mucous membrane was intact but showed **DIVERTICULA.**

Case 11. (G. W. Watson 1907, quoted by Telling 1908) Male 65. Death from ruptured aortic valve. The whole sigmoid flexure is fatty and presents marked **DILATION AND SACCULATION OF ITS NORMAL HAUSTRA**; in addition to these are **numerous diverticula** which in most cases enter the appendices epiploicae. **The pouching stops abruptly at the commencement of the rectum.** The sacculation and diverticula are filled with **hard faecal masses**; the mucosa is normal. Some of the diverticula present small orifices at the bottom of the dilated haustra; in some cases the haustra themselves diminish gradually and end as diverticula entering an appendix epiploica. There are certainly two distinct conditions: (1) sacculation of the haustra and (2) diverticulum formation. Externally many of the appendages present inflammatory changes; some are adherent one to the other, (in one case forming a 'ring'); in one there is a hard cherry-size faecal concretion, inflammation around which has led to obliteration of the orifice of the diverticulum and to the formation of a pedicle—that is, **the first stage in the process in the detachment and the formation of a free body in the peritoneum.**

Case 12. (Souttar 1914) Female 59. Was seized with sudden abdominal pain. There was extreme deep tenderness over the whole right side, with a mass to be felt in the right iliac fossa. There was a **PERFORATION OF A DIVERTICULUM OF THE ASCENDING COLON.**

TREATMENT.

Treatment is divided into surgical and medical. Moynihan says surgery is essential. Live up to the Leeds motto "LOOK AND SEE." Be a living pathologist in two senses: —

- (1) that you are alive yourself to the fact that pathology is as important to the surgeon as is anatomy; and
- (2) see pathology in a living body, without post-mortem changes when the field of tissue before you actually lives and almost cries out its needs.

"LOOK and SEE" is a wise motto: it satisfies the patient and also the clinician. Laparotomy nowadays is accompanied with a minimum of risk. Telling, however, points out that diverticulitis has been, can be, and will be cured by medical treatment alone.

Medical treatment, the restriction of a diet having heavy residue, and the administration of aperients causing fluid actions daily may check the progress of the disease, and prevent its com-

plications. In advanced cases where a tumour has formed, stenosis has occurred, or fistulae have developed, surgical interference will be necessary. The difficulty of surgical treatment in certain cases, may be in the extensive character of the disease, the colon from the hepatic flexure to the rectum being involved.

Dr. TELLING himself had the whole of the descending colon more or less infected, I am told, and although an eminent surgeon wished to operate on him on more than one occasion, as his condition became very serious, this eminent physician brought into reality that old saying "**Physician heal thyself**" and **he did so** without surgical aid, by **dieting** and the **use of medicinal liquid paraffin and kaolin** in small doses several times a day, and now stands as a living monument to the proof, that the disease which he himself described in detail for the first time, and suffered from in a severe form can be cured on simple lines, if only patience, which is a virtue, and a simple intestinal lubricant, and descretion in dieting, are observed. Sometimes surgical interference is imperative!

Gentlemen, observe these facts and read Medicine in order to observe more deeply.

It was Sir William Osler, who said:—

"To practice medicine and not read medicine, is to sail an unchartered sea. To read medicine and not practise it, is to not go to sea at all."

May I add **"To read medicine and then to practise it, is to sail a chartered sea."**

It must be remembered, however, that there are many new landmarks to be made. The Sea of Medicine is far from being completely chartered. There are depths we have never reached.

Gentlemen, see to it that you are in the forefront of the great and wonderful discoveries that lie ahead of us.

They are often so obvious, and so familiar that we overlook them. **Pay attention to details** in your work as TELLING, MOYNIHAN and others do; and as now we learn to master small things as though they are great things, in the days to come we shall live to master great and difficult things, with the same ease as we now master small and easy things. See to it that your observation is accurate and detailed, and let your name be connected with works which will be as a Pilot guiding others through the sea of obscurity into the haven of clarity.

In conclusion, as this meeting is, I understand, the last which will be held by the Medical Society before some of you qualify and go out into the world, I would like to ask you to read Sir Berkeley

Moynihan's magnificent Presidential Hunterian Oration delivered before the Royal College of Surgeons of England on February 14th 1927 and published in the British Medical Journal on February 19th, 1927, in which he says it is the man's energies after qualification which count most, and show what kind of man he is.

Sir Berkeley then says:—

“We may therefore regard Hunter and Lister as bridge-builders; it is out of a multitude of scientific observations, of apposite inferences, and of wide generalizations that such bridges are built, stone by stone, arch by arch. Posterity will perhaps remember only the open bridge—permanent, indestructible, all-sufficing—of Lister. Across that bridge we have swarmed, a triumphant host, and a vast new territory has met our almost incredulous eyes. Hunter was forever building bridges, ambitious in design, firm in their foundations, but always left unfinished. Some day new architects will come and give them the full span which Hunter surely meant them to have. It is remarkable to note how often he anticipated the lines along which we see that modern surgery is making its advance.

What of the future?

The Future.

As I look forward I like to humour my fancy and indulge my dreams. Imagination, Keats tells us, may be compared to Adam's dream—he awoke to find it truth. The art of the surgeon is the pillar of science, and it is for science to discover how that almost perfect art may now be used to the fullest advantage. We eagerly await the day when disease shall not require to be checked in high career, but shall be blighted at its origin, or even denied existence, when our weapons of war shall be laid aside. That day may yet be far away, but already beyond the distant hills we see promise of the dawn. It does not, perhaps, so much or so deeply concern ourselves as those who soon must take up our task, and lead the hosts whose victory shall attain our high ideal. In due time, and in accord with ancient precedent, this country of ours, the fruitful mother of so many gifted sons, shall raise up in our schools the youths who shall go forth to conquer a crown. They will be best equipped who keep to the course, recall the methods, and are imbued with the ardent spirit of the two famous men whom we praise to-day—the two greatest surgeons the world has ever known.

Our youths must be prepared for self-sacrifice, for arduous discipline, perhaps for the most heart-breaking rebuffs, for the stern or even bitter criticism of their fellows. But there never was a time so rich in promise, so laden with

rewards for those who labour with sincerity and truth. They will not travel alone. The whole army of science is in league with them, moving forward with incredible speed, eager to lay at their feet the triumphs of its astounding conquests. The responsibilities which rest on them, the intellectual accomplishments and the dedication of their lives demanded of them, are enough to cause the stoutest heart sometimes to falter. Yet, armed with the sword of the spirit and the breastplate of faith, they will remember that the happiness of life lies in its responsibilities, that true joy is found in the search for what may after a weary journey prove unattainable. Ahead lies the noblest of tasks to which they may consecrate themselves: for the lives of men are in their hands, the love, the happiness, the whole welfare of mankind. We need not fear. They will be worthy of their charge. God counts not result but effort."

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A.C.



A NOTE ON PREDIVERTICULITIS AND DIVERTICULOSIS.

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The following is a résumé of some remarks made by me in connection with a paper on Diverticulitis read before the Hong Kong University Medical Society by Dr. Cannon:—

There are three terms used in this condition.

- (1) **Prediverticulitis.** This means spasm of the haustra of the large bowel caused by some form of irritation.
- (2) **Diverticulosis** implies the presence of Diverticula in some part of the intestinal tract. These diverticula may be congenital — doubtless those found in the duodenum commonly are so—or they may result from congenital weakness in the bowel wall and are then comparable to the pouches found in the oesophagus. Those found in the colon are, however, usually the result of some pathological process and it is fairly certain that prediverticulitis plays an important part in their aetiology.

It is at least probable that the following diagrams represent stages in the formation of diverticula from prediverticulitis:—



A Normal colonic haustra.



B Narrowing of the haustra caused by spasm, i.e. Prediverticulitis.



C Dilation of the extremities of the spastic haustra caused by faecal masses destroying part of the intestinal wall by pressure and septic infection.



D Fully formed diverticula in some of which the channel leading to the lumen of the bowel is so narrow that they appear to be completely separated.

- (3) **Diverticulitis** implies a definite inflammatory change in diverticula and is manifested clinically by signs and symptoms which range from vague abdominal pains and slight toxaemia by various stages up to "acute abdomen."

It may fairly be claimed that radiographic diagnosis by an opaque meal followed or replaced by an opaque enema is the only way in which these conditions can be clearly proved to be present.

The diagrams already given are a rough picture of repeated radiographic findings.

I have met with in the past seven months 10 such cases and in 4 I have been able to trace by repeated radiograms the progress of the condition. In three cases prediverticulitis was observed and in all of these varying degrees of abdominal pain, irregularity in defaecation and abnormal stools containing at times blood and pus were noted. In one of these a very high degree of toxaemia was present. In all these cases treatment reduced and finally removed the symptoms and as this improvement took place it became more and more difficult to discover abnormality in the colonic shadows and eventually the appearance was as in diagram "A." *

In the 4th case the symptoms were abdominal pain after exertion and some toxaemia both of which were of no less than 12 years duration. Diverticula were clearly shown in the colon and the descending colon was adherent and could not be moved by palpation.

Clinical cure was as before accompanied by an absence of diverticula in the radiogram but the descending colon was still adherent.

It is of interest to note that the colonic adhesion had been diagnosed six years previously in America by manual examination and the abdominal pain, as I believe incorrectly, attributed to it.

The therapeutic measures adopted were regulation of diet and the administration of Colloidal Kaolin and Paraffin, and in the two cases in which the most rapid improvement took place the colon was massaged by the simple but efficient method of suitable abdominal exercisers.

In five cases I was unable to follow the condition after the primary diagnosis had been made and in one case, in which the radiographic diagnosis was prediverticulitis and the clinical signs were obscure abdominal pain and irregular pyrexia, up-to-date the result of treatment has been to remove the pain but not the pyrexia.

* One of these cases is still under treatment and after four weeks shows no clinical signs whatever but the radiographic investigation is incomplete.

DENTAL FOCAL INFECTION.*

H. F. SOMMERS.

Hong Kong.

It is a great privilege to have been asked to address this representative body of Hong Kong's physicians, and equally valuable is this opportunity of presenting my own notions, and the opportunity of learning from you.

In approaching a consideration of the subject under discussion, it might be well to call attention to the fact that dental disease is one of the most universal of all the afflictions of humanity, especially when it is known that 90 per cent. of the children of civilized countries have defective teeth.

I think we have all been convinced of the importance of focal infection as a cause of systemic disease, and I believe focal infection from the teeth is a factor to be considered in many systematic diseases, such as arthritis, emboli, endocarditis, rheumatism, streptococcic infections, osteomyelitis, vertigo, epilepsy, dementia, and many others. Many disordered conditions of the body are due to absorption from toxins and pus collections.

The seat of dental focal infection is called the periapical region. Infections in this area from which there is no drainage, produce toxins which are carried through the circulation and cause pathologic disturbances in different parts of the body. A large portion of these infections may exist for years without giving evidence of systemic disease, and then suddenly the previous good health of the patient breaks down. The reason for this is immunity. Even when quiescent a focus of infection is not entirely harmless however, because poisons are being produced which must be combated, either locally or after they enter the circulation of the lymph, or blood, which is at least a strain on the body.

Dental focal infections are usually of coccal origin and the body becomes more poorly immunized to the cocci than even to the bacilli. Coccal infections arise over and over again in the same individual, as in ferunculosis, sinus infections, etc. Dental infections once started, persist and are slow to subside, and although quiescent for a time light up again to do much damage.

* Read before the Hong Kong University Medical Society on 10th November, 1926.



CASE 1.



CASE 2.



CASE 3.



CASE 4A.



CASE 4B.



CASE 5.

As long as a focus exists we must assume that the body has not developed sufficient immunity to entirely suppress the infection, and the danger of its becoming of a more general spread is always present.

Coccal infections may fail, not only to lead to immunity, but may lead even to a state of greater susceptibility, or hypersusceptibility, to infection.

There is one point I would like to make clear. So many speak of dead teeth. There is a distinction between a dead tooth and a pulpless one. The vitality of an adult tooth is entirely dependent upon the peridontal membrane. The pulp, or so called nerve, builds up the structure of the tooth, and after this has been accomplished, physiologic action of pulp obliteration commences. The pulp furnishes no nutrition to the cementum, which is the only portion of the tooth upon which dependence rests for its stability in the alveolus.

If a tooth has had the pulp removed and the canal contents thoroughly cleaned of infectious material, as well as all organic tissue, and sterilized and filled to the point of hermetically sealing the apical foramen, and, if the peridontal membrane is receiving proper nutrition, the tooth can have no part in the matter of infection.

A great deal has been written regarding the relation of the eyes and teeth. The effects of teeth on the eyes may be reflex irritation, or toxic. Teeth causing eye symptoms are not necessarily painful. Pain in the teeth or peridontal membrane is rarely caused by eye strain. Under toxic eye affections are those conditions due to infections of roots or alveolar abscesses, and the absence of the teeth does not exclude teeth as a causative factor of disease, because X-Ray examinations frequently reveal broken fragments of roots imbedded in jaw bone, resisting absorption, or, alveolar abscesses. Often when a tooth is removed the infected membrane is left to continue its pathological activity indefinitely. The gum heals over, enclosing the infection, often resulting in bone necrosis. For this reason the mere removal of the teeth fails sometimes to be of healthful benefit to the patient as expected. The relationship between the teeth and eye, ear, nose and throat is a close one because of proximity, and their common innervation with the Trigemini, with its highly complicated ganglionic system, puts the teeth in circuit with those organs and nearly everything else in the system.

Dental surgeons are criticised for so called "wholesale" extractions. The basis of this rests upon such grounds as; First,—physicians and dentists, regardless of the condition of the teeth, advise their removal because no other factor is found

to account for the patient's condition; Second,—teeth are removed without X-Ray examination; Third,—frequently savable teeth affected with pyorrhea are removed; Fourth,—pulpless teeth affected with pyorrhea are refomed; Fourth, pulpless teeth showing no areas of rarefaction; Fifth,—infected teeth which by proper treatment could be saved.

In regard to the first, it is believable that there are few cases in which good, sound teeth are lost. It is rare to find a patient referred by a physician for examination whose teeth are absolutely sound. Second, many teeth are so obviously diseased that X-Ray examination is superfluous. Third, in regard to pulpless teeth showing no area of rarefaction, it is claimed by Rosenow and other investigators that such teeth are dangerous, because these patients have less resistance. Fourth, there are cases in which the patient has a number of infected teeth or a number of pyorrhetic teeth, and is advised to have all teeth removed because a more hygenic or a more stable restoration may be made. Fifth, dentists often do make vain attempts to treat and properly restore teeth which prove hopeless. properly restore teeth which prove hopeless.

It is the duty of the dental surgeon to exercise his skill, knowledge and ability to prevent teeth from becoming diseased, and when they become abnormal, to employ his skill, ability and knowledge in an effort to restore them to a normal healthy condition. It is his duty to save teeth up to a certain point, but it is beyond this point to retain teeth which are dead, pulpless and incurably infected, or so unsupported as to be hopeless functionally.

I do not want to take in too much territory, but I want to say that a great deal of non-specific infections of the whole body originate in the oral cavity. A great failing of dentists and physicians is, perhaps, not seeking consultation as often as they should. Dentistry is a part of medicine as medicine is a part of dentistry. There is much to be learned from each which might be of benefit to both, as well as to the patient, by a closer understanding of dental conditions and the general physical conditions of those under treatment. Infection and resistance should be weighed together in the consideration of many conditions to be treated.

I have selected at random, from my files, a few cases for you to see which I shall briefly describe.

Case No. 1.

Is an imbedded root in the jaw bone. The gums had healed over from a previous extraction, but the patient had a great deal of suffering from neuralgia and wondering aches. Came for examination and after removal of root had rapid recovery.



CASE 6.



CASE 7.



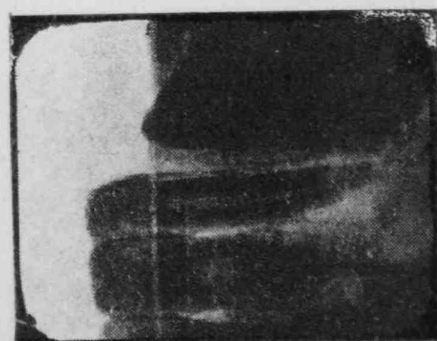
CASE 8.



CASE 9.



CASE 10.



CASE 11.

Case No. 2.

Patient was under medical treatment for arthritis and was referred by his physician for examination,—had been having a great deal of trouble with his eyes for a period of four years and his vision was poor. Said he suffered greatly. Diagnosis: Dental Cyst. Treatment: Removed the tooth and entire mass, under novocain conduction, curetted the bone, swabbed the cavity with iodine, and after healing took place patient recovered from his condition and claimed that his vision has also cleared up better than for years.

Case No. 3.

Alveolar abscess.

Case No. 4-a.

Is a properly filled root canal after the pulp had been removed.

Case No. 4-b.

Is a view of two teeth with improperly filled root canals.

Case No. 5.

An impacted lower 3rd. molar. Lower 2nd. molar shows pulp stone formation. In impactions there are severe cases of neuralgia giving rise to referred pain and nervous disturbances. In many of these cases the trouble is due to the tooth sac, surrounding the crown of the impacted tooth, becoming an inclosed focus due to the presence of infection.

Case No. 6.

A broken root imbedded in the jaw bone.

Case No. 7.

Alveolar abscesses due to trauma resulting from an accident which happened some years previously. Patient had considerable illness and rheumatic pains and after extractions and curettment of the areas, had complete recovery.

Case No. 8.

A cyst, broken roots being imbedded.

Case No. 9.

Alveolar abscesses.

Case No. 10.

A cyst—under two infected teeth in the mandible.

Case No. 11.

An abscess.

Case No. 12.

A cyst.

Case No. 13.

An impaction and pulp stones.

Case No. 14.

Alveolar abscess, decay progressed through the tooth structure under a filling in adjacent tooth—infection resulting.

Case No. 15.

An infected area extended along the jaw after a previous extraction. This condition was acute and patient had a great deal of suffering and was quite ill from the effects. Is at present on the road to rapid recovery after treatment following a free bold incision. Bone sequestrum will soon come away and regeneration of tissue will follow.

Case No. 16a.

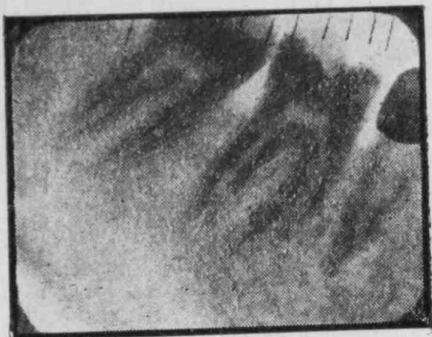
Same condition as in 4b. Recovered from arthritis after removal of these teeth.

Case No. 16b.

Same condition as in 4b. This case has been recovery from arthritis since affected teeth were removed.

Dr. Charles H. Mayo has stated that three-fourths of the work of the Mayo Clinic is abdominal surgery, in nearly all of which the cause of the lesions can be traced to mouth infections. In an examination of 6,000 radiographic films of the mouths of 600 persons over 20 years of age (average being 35) Dr. A. D. Black found 55 per cent. to have one or more rarefied areas with an average of 1.4 areas per person.





CASE 12.



CASE 13.



CASE 14.



CASE 15.



CASE 16A.



CASE 16B.

RABIES AND ANTI-RABIC TREATMENT.*

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The disease of animals known as Rabies with its human form known as Hydrophobia, is known in all parts of the world except Australia where the excellent regulations as to importation of animals, are so strictly enforced that its introduction is unlikely. It assumes epidemic form in India and Russia, the most severe cases being caused by the bites of wolves and jackals. In most countries dogs are the chief sufferers, but cats and various herbivorous animals have been known to be affected.

In all civilized countries the number of cases has greatly diminished as the result of preventive measures and treatment by modern methods. The Netherlands have recently become quite free.

I do not propose here to describe the clinical symptoms either in human beings or animals as they are doubtless well known to you all.

Rabies or canine madness is an acute disease of the central nervous system occurring principally in dogs and allied animals, and transmitted by means of bites. The term "Hydrophobia" should be confined to the disease as met with in man only, as the fear of water is not seen in the lower animals.

The causative agent of rabies has not yet been isolated; but it is certainly a living organism and for want of a better name it is known as "the rabies virus". In the body of a rabid animal the virus is found in the nervous system, brain, spinal cord and large nerves, also in the salivary glands, pancreas and suprarenal glands. Very little is found in blood, bone, muscles etc.

There is a very distinct danger of infection to those who remove brains from a rabid dog or other animal for examination. The usual mode of infection is by bites, the virus passing from the brain into the salivary glands and saliva of the infected animal, the saliva of human beings and herbivora contain practically no virus. The chances of infection through cuts and abrasions is very much smaller than in the case of definite bites, as in the former case the virus is deposited on the surface of the

* Read before the Hong Kong and China Branch of the British Medical Association on 6th April, 1927.

wound and being very delicate in nature, is easily destroyed by antiseptics etc., sunlight 40 hours, drying 46 hours or a temperature of 50°C. 1 hour. Deep penetrating bites are different as caustics are very seldom able to reach the virus inoculated. The saliva is rarely infectious earlier than 72 hours before definite symptoms appear, once symptoms appear the animal seldom lives longer than 2 to 4 days. Acton and Knowles of the Kasauli Pasteur Institute of India state as follows: "If the biting animal remains alive and well for ten days after biting a human being, the saliva cannot have been infective and treatment in such cases is not necessary", the Colonial Veterinary Surgeon in this Colony fixes 14 days as the limit for safety. For all practical purposes, the saliva is the only infective material from which man and animals contract rabies, the milk of rabid animals has occasionally been shown to contain the virus.

The incubation period in man is given as from 40 to 49 days, by Harvey, it may be as short as 6 days or as long as 2 years (Horsley), in the dog it varies from 16 to 90 days, the majority of cases begin to show symptoms between the 25th and 55th day after the bite. The introduction of Rabies into the British Isles is prevented by a strict quarantine for three months of all dogs entering the country, and further police supervision of them for another three months. The disease does not make itself evident until the virus has reached the brain and spinal cord and has set up sufficient changes in these structures to cause symptoms. The incubation period is influenced by the following factors, the variation in the amount of virus inoculated, the situation of the bite, the presence or absence of clothing and the promptness and efficiency of cauterisation. Bites on the face are particularly dangerous, especially as they are on bare skin and often multiple.

Pasteur considered that the virus travelled along the nerves, and that the nearer the wound was to the brain the shorter was the path to be traversed by the virus, and consequently the shorter the incubation period. Acton and Knowles believe that the depth of the bites, bareness of skin, and multiplicity of bites are of greater importance than their actual situation.

Two types of rabies occur in the dog, (1) Dumb or paralytic rabies, (2) Furious rabies. Sometimes the furious symptoms occur first followed later by a paralysed state. In pariah dogs and young puppies furious symptoms are common and the animal bites freely; well cared for dogs, on the other hand, rarely bite human beings, in fact in the early stages of the disease they often exhibit an increased affection towards their masters.

The negri body test is only of value if positive, the negri body is not the parasite of rabies, it occurs in the ganglion cells

of the brain in other diseases, and is believed to be a structure produced by the degeneration of the nuclei of nerve cells; some writers believe them to be a tissue reaction round colonies of the virus. If negri bodies are present and fairly numerous, a diagnosis of rabies can be made with certainty, as in no other condition are they found in such large and definite numbers. They are often not present in the brain of dogs dying after a very short incubation period, apparently they take some time to form, appearing only 4 to 5 days before symptoms, also, they are destroyed by decomposition. A practical point to bear in mind when sending dogs' heads to the laboratory for examination is that they should be sent in formalin solution.

If a human being is bitten the wound should be well washed, dried and then thoroughly cauterised, the best agent to employ is pure carbolic acid, as it penetrates well, quickly destroys the virus and is a local anaesthetic, care must be taken that the sides and particularly the bottom of the tooth marks are reached by the antiseptic. It may even be necessary to open the wound to allow the caustic free access to every part in which the virus may have lodged. Any local treatment to be of value must be vigorous and promptly administered, within an hour of the bite.

Neither cauterization or excision can be absolutely depended on to remove all chances of infection.

The most important factor to help medical men in a decision as to whether the person bitten should be given anti-rabic treatment or not, is the dog itself, it should not be killed, but placed under observation, as otherwise the most important signs of rabies, viz. the short duration of life 2 to 3 days is lost.

If some saliva or a portion of the fresh brain tissue from a rabid animal be injected into another animal the second animal dies in about 14 days of paralytic rabies, by constant sub passages, usually about 20 to 30, the virus becomes fixed, that is its virulence is increased so that the animal shows symptoms on the 7th or 8th day and dies on the 9th day or earlier. Negri bodies are not associated with the "fixed" virus of rabies, they only occur in cases of "street" virus infection.

Anti-rabic treatment is based on Pasteurs discovery and consists essentially in administering graduated doses of fixed virus. Pasteur himself admistered doses of dried cord of varying periods, starting with a cord that had been dried for some considerable time and gradually reducing the period of drying.

The method of treatment adopted in most Pasteur Institutes nowadays is that of giving small doses of fixed virus cords,

emulsified either in plain saline or carbolised saline containing 0.5 per cent. of pure carbolic acid. This method is used in the Institute here, the initial dose being 1 cc. of a 1 in 10,000 dilution in carbolic saline, gradually increased and repeated 3 times through a series of 24 doses, giving two daily, up to a dose of 1 in 25 dilution. The treatment being completed in 12 days. McKendrick considers this method as much the best and safest, also, the occurrence of paralytic accidents is avoided, no cases having occurred at Kasauli although 47,420 cases were treated. Ionesco states that anaphylactic symptoms do not occur after the administration of carbolized vaccine.

Prophylactic dosage of anti-rabic vaccine is used in Japan to protect dogs, and it is stated that its use has already resulted in a 75 per cent. reduction in the number of cases of rabies, the disease occurring only in dogs which were not immunised.

I am at present trying to fix a strain of rabies virus obtained locally in order that we may do likewise in Hong Kong.



Editorials.

LEST WE FORGET.

The announcement in the leading medical journals of Great Britain of the Lister centenary to be held in July reminds us that it is a hundred years since the founder of modern surgery was born. The occasion recalls to our mind the words of Sir Charles Ballance, who said, "It is curious how men and methods in surgery are so soon forgotten."

Indeed, not only in surgery, but in most things besides, the memory of man is conveniently short where gratitude is concerned. The announcement then has more than a passing interest. It affords us the opportunity of dwelling gratefully on the work of those who have gone before. To the young plastic minds in our midst, the budding medicos, this discussion is no less opportune. It enables us to give them an account of a past chapter of surgery, to impress on them and to stimulate their minds with the highest ideals, thoughts and labours of those whose lives have made the profession what it is. It was Longfellow who said,

"Lives of great men all remind us,
We can make our lives sublime;
And departing leave behind us
Footprints on the sands of Time.

Hero-worship in these circumstances, is not merely a sentiment—it is an incentive.

The practice of surgery is an ancient art. Ever since the dawn of history, operations of one sort or another have been performed. But it was not until the nineteenth century, that a galaxy of brilliant minds by their patient work first paved the way for the rapid advancement of modern surgery. It was Bacon who said in his characteristic way, "I esteem it the office of a physician, not only to restore health, but to mitigate pain and dolours." What Bacon said in so many words has been the problem stirring the minds of physicians for many ages. In short, they were searching for a means to bring about a condition of insensibility to pain in the course of an operation—to produce a state of anaesthesia—(the last was a word introduced by the well-known writer and physician, Oliver Wendell Holmes).

In the early days of Greece, the mandragora plant had been known to possess the power of dulling pain; the passage in Scriptures, describing the scene of the Crucifixion, where it was said, "They took a sponge, and filled it with vinegar and gave him to drink"—undoubtedly had reference to the sleep-giving sponge or "apple of sleep" that Pliny described some 2,000 years ago.

Indian hemp had also been used for a similar purpose, and in early Carthage, Egypt and Babylon, there were similar drugs whose composition has since been lost to us.

That these ancient anaesthetics were unsatisfactory was evidenced by the fact that at the beginning of the nineteenth century operations were still performed without them. In these more humane days we have no idea of what it is to operate without an anaesthetic. The shrieks of the victims, the crudeness of the instruments, the roughness (because of the necessary speed) of the surgeons, the splash of blood, and the presence of sawdust on the floor, resembled more the scene of a victim in the torture chamber in the dark days of the Inquisition, than that of an operation undertaken for the relief of suffering. Such was one aspect of surgery, when the nineteenth century began.

It happened at this time 1800, Sir Humphry Davy in the course of his experiments on gases, discovered Nitrous Oxide or laughing gas, which Dr. Horace Wells, of America, was the first to introduce into the dental profession in 1844, and it has since become the unfailing friend of victims in a dental chair. The possibilities of such an anaesthetic directed the attention of others to this study and in 1845, two other Americans, Drs. Marcy and Morton discovered the use of sulphurous ether. While the merits of this anaesthetic hung in the balance, Sir James Young Simpson, Professor of Midwifery in Edinburgh, in 1847 introduced a thick oily fluid called Chloroform, the composition of which twelve years previously the celebrated French chemist Professor Dumas had revealed.

By the first half of the nineteenth century, therefore, operations were robbed of their horror, and patients could now stand much severer ones with less signs of shock. In this way, a great problem in surgery was solved.

Meanwhile, another branch of Medicine was rapidly developing, the outcome of which had a tremendous influence in surgery. Studies into the world of countless varieties of microbes were zealously pursued. Work in this department of science was accelerated by the improvements of the compound microscope in 1824. The man who aided in this improvement was Joseph Jackson Lister,—the illustrious father of a more illustrious son. Little was then realised what important parts those little microbes play in the life of man. The way was now clear for a more intensive study of these tiny organisms—the Bacteria—(the word was introduced by Devaine in 1830).

While researches were thus going on, in the quiet little cottage at Marnoz in France was born in 1822, that genius of a century, Louis Pasteur. By training, a chemist, gifted with a brilliant—aptitude for research, he contributed much to the

knowledge of modern chemistry, as his work on racemic acid showed. But his genius transcended his own particular field of work. He directed his keen mind to the study of the cause and treatment of a blight to silk-worms: he next studied Anthrax in sheep and cattle, and then chicken cholera, and when he had unravelled these he studied Rabies, the treatment of which still bears his name. But from the surgeon's point of view his greatest work were the researches on Fermentation and Putrefaction; which was destined to play such an important part in the revolution of surgery as then practised.

The time was now ripe for the conquest of that world of man's invisible foes. By different avenues, through different workers, in different branches of science knowledge was being garnered, and it only needed the touch of genius to co-ordinate its component parts and apply it in the conflict of man and the microbes. That genius was no less a person than Joseph Lister, afterwards Lord Lister, son of Joseph Jackson Lister, the man who aided in making the compound microscope by which the study of microbes was facilitated. Thus by a strange coincidence, it fell to the lot of the father to help in laying bare the microbes, and it was left to the son to exterminate them for man's benefit.

Joseph Lister then was born in 1827, in West Ham in England. His father was a prominent Quaker, whose work in connection with the microscope won him the much coveted distinction of being elected a Fellow of the Royal Society, London. These circumstances played a part in moulding young Lister's life in subsequent years.

Educated at University College, London, and then at its medical school, the future Lord Lister had a brilliant career, becoming a Fellow of the Royal College of Surgeons at the age of twenty-five. His visit to Edinburgh was the turning-point of his career; for there he met Professor Syme, one of the fore-most surgeons of his day, who took a liking to him and gave him an appointment at the Royal Infirmary; and there too, he met his fate in the person of Syme's eldest daughter, Agnes. They were married, but they had no children, and what might have been their loss, was the gain of science; for together they devoted their lives to their work—Mrs. Lister helping as a wise woman should, in her unobtrusive way by taking notes for him, encouraging him when he needed encouragement, and assisted him in his experiments. Of their early struggles in Edinburgh, little need be said—the professional jealousy of rivals, the denseness of his contemporaries in refusing to accept his teaching, the stubbornness of house governors were regrettable events, but they serve to show that human nature has changed little since then.

Surgery at this time was at its lowest ebb. In the words of one of the living well-known surgeons (Sir Charles Ballance who had seen these days)—

“All operations were followed by sepsis, suppuration, cellulitis, Erysipelas, septicaemia or Pyaemia. Some hospitals on the Continent were closed because Hospital gangrene and death followed every operative intervention. The Hotel-Dieu in Paris, like all other hospitals, was a hotbed of sepsis, and it was remarked that the inscription over its door ‘This is the house of God, and the Gate of Heaven’ was more literally true than its founder appreciated.”

To us of the present generation we have no conception of the appalling state of surgery in the dark days before Lister. In cases of amputation through the lower limb only one-third of the patients escaped death; where there was an extensive lesion of the skin in an injury, death was almost inevitable. This high rate of mortality was universal. According to the statistics furnished in 1874 by Erichsen, of the staff of University College, and whose House Surgeon Lister was for a while the figures are most illuminating.

Of Erichsen’s own cases of amputations, the mortality rate was 25% ; at Edinburgh Infirmary it was 43% ; in Glasgow, it was 39.1% ; in Pennsylvania Hospital in America, it was 25% ; in Massachusetts Hospital in Boston, it was 26% ; in Parisian Hospital it was 60% at Zurich, 46% ; in Vienna 43% . In the allied field of Obstetrics, the results were equally shocking. According to the statistics of Ignaz Phillip Semmelweis, a young Hungarian physician, who took his figures from a hospital in Vienna, the incidence of puerperal fever was 25%—30% . This poor man, who had a glimpse of the truth, by which Lister won immortal fame, unfortunately had not Lister’s ability to teach nor his patience to bear vitriolic attacks. In trying to point to his contemporaries the error of their ways, he died a martyr to his cause, driven to a premature death by the jealousy of his confrères. Almost his last words were:—

“I can only dispel the sadness which falls upon me by gazing at the same time into that happy future when within the lying-in hospitals and also outside of them, throughout the whole world, only cases of self-infection will occur. But if it is not vouchsafed to me, to look upon that happy time with my own eyes, from which misfortune may God preserve me, the conviction that such a time must inevitably arrive sooner or later after I have passed away will cheer my dying hour.”

Reading this pathetic wish, and remembering the figures just quoted, the past of surgery and obstetrics is like a nightmare. When the cloud thus hanged heaviest over the field of surgery, Lister’s discovery came with the welcomed warmth of sun-shine after rain. He had been reading Pasteur’s articles on the Researches on Fermentation and Putrefaction, in which some of the conclusions arrived at by the great French savant

were that there were aerobic and anaerobic organisms in the air, in fluids, and everywhere; that they are killed by heat and other agencies; they cause putrefaction and fermentation by their growth; that these processes can be prevented by exclusion of the organisms.

To-day, these facts are but elementary knowledge that probably every school boy knows, but in the days of Lister, little was known of Bacteriology, and the credit to him is the greater in that with the uncertain and often misleading light of his day to guide him, he saw the significance of these facts. The unsatisfactory state of surgery then was due to lack of surgical cleanliness. With infinite patience and ability, he at last perfected his technique of asepsis and antisepsis, and the modern surgical technique is largely based on his work. Success crowned his efforts, but it was not without a struggle.

It is a true saying that he who would reach the top rungs of fame must bear the hatred of those below; and he who would take the path untrodden by the common multitude, who would not hold the views of the common herd, must pay for his originality. As Lister's success grew, so grew the number of his enemies, and the attacks on him were at times acrimonious. But his early Quaker training stood him in good stead. It taught him to bear success with humility, to answer scurrilous attacks with restraint. Notable among his detractors was Simpson, who in his blind attacks on Lister, seemed so far to forget himself and all that he himself had been through when he first introduced chloroform to the profession.

Ultimately, however, Listerism triumphed, and clinics after clinics abroad acknowledged the superiority of his methods. London and some parts of Great Britain were still unconvinced, for "a prophet is not without honour save in his own country." At long last, even doubting London was convinced. Thus passed away the darkest chapter in the history of surgery, and with the dawn a new era appeared.

How much modern surgery owes to Lister can best be seen by the fact that within a period of less than 50 years, the advance of surgery has made enormous strides and outpaced the progress of a century. Orthopaedic surgery, with its wonderful operations for the correction of deformities and the restoration of function at once becomes an important branch of surgery; neurological surgery, instead of being an occasional surgery, becomes an everyday affair; the dangers of abdominal surgery are reduced to a minimum; and the plastic operations of the face or aesthetic surgery, are no longer limited to the gifted few. One trembles to think what would have been the fate of these operations in the days before the advent of Lister's discovery, for sepsis would have at once nullified the best efforts of the cleverest surgeons.

The triumph of Lister has meant the triumph of man over his invisible foes—the deadly microbes, and it may be said of every one who has had operative treatment—from an appendix to a compound fracture—that but for Lister's researches, that person may not now be alive to tell the tale. Modern surgery must be forever associated with his name, and humanity has more lives saved by his work than are lost through all preceding wars. His work is international; his fame is undying. He had lived to benefit mankind, and mankind will not willingly let his memory die. Nobly he had lived and laboured, and when on February 10, 1912, at the ripe age of 85, he died full of years and honour he was mourned by the world of science. The centenary of his birth is therefore no local affair, nor merely a national observance; wide has been his influence, and widely will they celebrate the birth date of him whose labours have saved so many and will yet be the means of saving many more in the generations that are to come. Of him and of Pasteur it may be truly said that their work is the living and imperishable monument of their lives!

We have made reference to Pasteur and Lister,—giants of intellect who have stamped their names in history, but what of that army of unknown or comparatively little known workers who though less brilliant yet contributed much to our knowledge to-day? What of the less gifted who no less inspired by an earnest zeal, bravely faced privations to carry on the torch of knowledge?

Soon after the World War, when in Soviet Russia there was a scarcity of everything except sufferings, diseases, and revolutions, Mr. Horsley Gantt, of the American Relief Administration in Leningrad in describing the plight of the scientists there said,

“Well-known professors and clinicians became destitute; many physicians entered the hospital with hunger œdema, and death from starvation became frequent. Notwithstanding all these terrors, scientific life did not cease altogether. Half-starved men continued to carry out their experiments on half-starved animals. Dead animals were cooked and fed to the living. After an operation the animal was often taken home for the night to be kept near the stove with the investigator.”

Of such is the unquenchable spirit of science!

No less intrepid are the pioneers of X-Ray work, who knowing the risks they run yet carry on, until maimed and then killed by those very rays.

More commendable still are those who in the midst of the fiercest epidemics offered their services. Many nurses have laid down their lives in such a cause, and many doctors too. Among those who fell, in the recent epidemic of typhus in Eastern Europe, which claimed a toll of one hundred thousand victims, was a woman Dr. Elsie Inglis. Throughout the history of Medi-

cine, one finds many such instances of heroism.—One need only to turn to the progress of Tropical Medicine to find that knowledge has always been purchased at the cost of some martyr's life. The study of cholera was paid for by the death of workers in the laboratories or by the bedside; the study of typhus claimed Prowazek as one of its victims; Relapsing Fever claimed Dutton; Leprosy claimed Father Damien; Yellow Fever claimed Lazear; and in the words of David Masters—"So Science marches forward over the graves of her heroes."

One would have thought that such men who died in the course of their labour for science and humanity would be better treated by the masters they serve. But facts speak for themselves. Lazear gave his life in the researches on Yellow Fever; yet his Government and indirectly the people it represented gave his dependents—his wife and two children the princely sum of £1 a week, which was only increased to over £6 after eight years of agitation! Kissinger—the man who volunteered to be experimented on in the study of Yellow Fever, and who was later permanently paralysed in consequence received from the same source 15 shillings a week, which after much agitation was increased to £6 a week and haggled down by the Government to £5 a week. In a recent number of "Science Progress" Sir Ronald Ross makes a similar accusation against the Government, because after the death of a well-known investigator, whose "work on Typhoid alone must have saved this country hundreds of thousands of lives and some millions of money during the War"—his friends had to provide for the education of his children. And yet public money has been spent on less deserving people. It is not right that a man carrying on researches should be worried with financial matters, and the whole problem of the support of these workers should be studied by some responsible public body.

It speaks volumes on the keenness of such workers and their unswerving devotion to science that despite these drawbacks they are willing to plod on in comparative obscurity. It is questionable whether a man has the right to leave his dependents unprovided for, trusting to the tender mercy of a proverbially cold hard world and devote himself to science. It may be noble, altruistic and all that, but it is not common-sense.

Such facts as these however only heighten our sense of appreciation of the heritage handed down to us—that our knowledge to-day has been wrested from Nature at a price—and sometimes it is a tremendous price—the price of sufferings of the actual workers themselves, and—(perhaps this is seldom known or sufficiently realised)—indirectly, the sufferings and hardships of their dependents. Medicine has been called a noble profession—it is noble because the men and women who follow it have been noble. History perhaps does not bear their names; in vain

would you look for a record of their deeds on marble slabs or storied urns; there may not even be a stone to tell where they lie; where Truth leads, with unfaltering steps they follow, and their last resting place may be beneath the luxuriant foliage of some Tropical trees, or in some shaded malarial swamps scarcely familiar to human tread. Their proud noble spirits transcend such limitations as the brass plates or animated busts—they live again in the work they leave behind. To them the motto is to have laboured well is to have lived well. These men and women are truly heroes and heroines, and not as a recent writer puts it “those military maniacs who have waded to publicity through a welter of blood and a chorus of groans”.

“That man is great, and he alone,
Who serves a greatness not his own
For neither praise nor pelf:
Content to know and be unknown.”

S.W.P.



Clinical Notes.

THE MENTALLY DEFECTIVE CHILD.

ALEXANDER CANNON.

Government Medical Officer, Hong Kong.

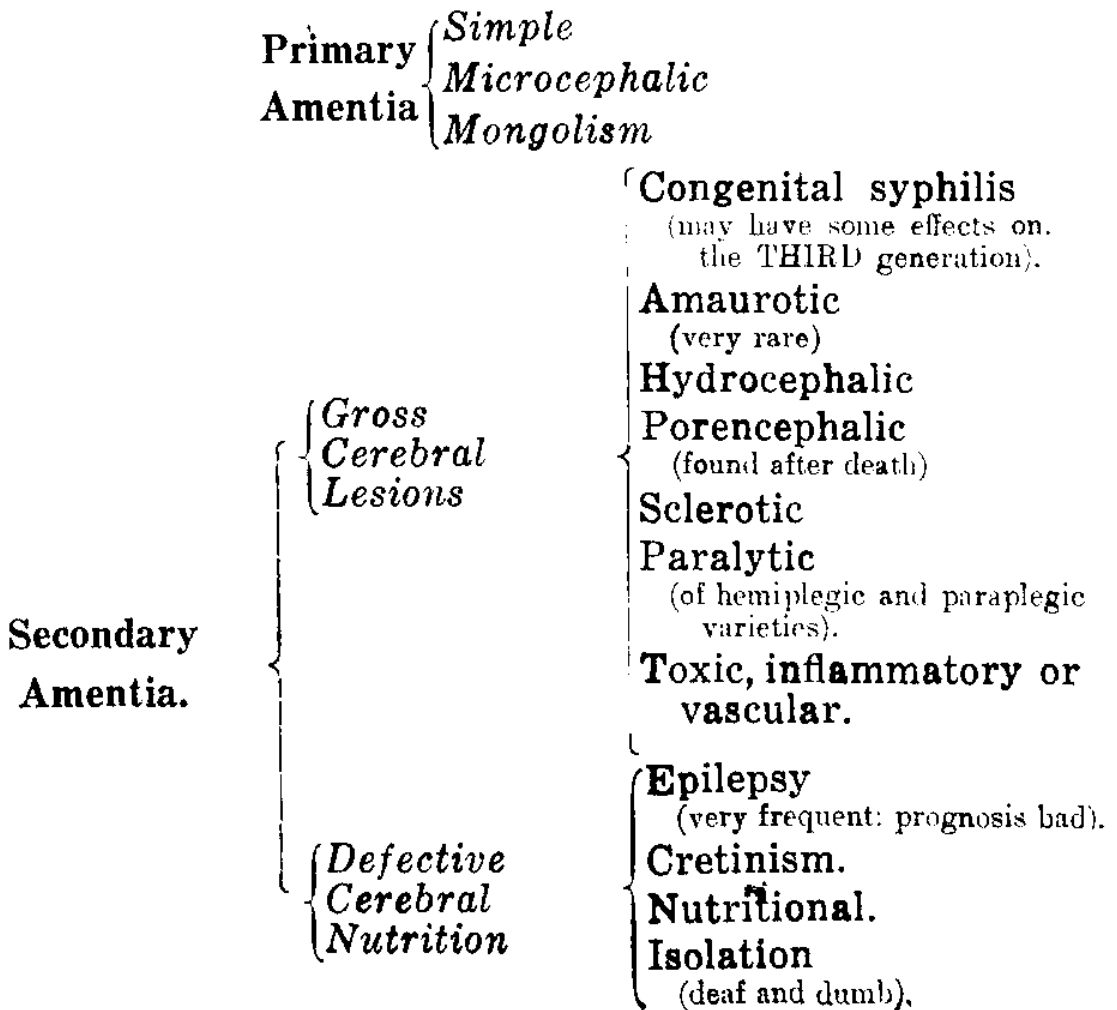
This is a matter of great importance to all members of the Medical Profession; both students and doctors.

DEFINITION: The mentally defective child is a child either born with a brain made up of cortical neurosis, numerically deficient, irregularly arranged, and imperfectly developed, or at birth, or within a short time of birth suffers with some gross affection of the brain—traumatic, vascular, inflammatory, or toxic, which leaves the brain permanently defective; or suffers in some bodily way so that the brain is deprived of an efficient supply of blood, internal secretion or efficient stimulation via the senses.

There are three main classifications, namely:

- I. PATHOLOGICAL
- II. LEGAL.
- III. PRACTICAL. (NORMAL).

PATHOLOGICAL CLASSIFICATION.



LEGAL CLASSIFICATION:

- I. Idiots.** Children so deeply defective in mind from birth or from an early age as to be unable to guard themselves from common physical dangers.

Facts observed at the time of examination:

Mary Jones, although 7 years of age is unable to walk or talk. She rocks herself to and fro at the same time making unnatural incoherent sounds. She is extremely dirty, giving no sign when she wants to be attended to. Her attention is almost impossible to attract and cannot be held. The defect has existed from birth and is so gross that she is unable to guard herself from common physical dangers.

- II. Imbeciles.** Children in whose case this exists from birth, or from an early age mental defectiveness not amounting to idiocy yet so pronounced that they are incapable of managing themselves or their affairs or of being taught to do so. The child has to be looked after and cannot be educated.

Facts observed at the time of examination:

John Dunn although of the age of 10 years cannot read simple words and can only correctly pick out a few letters. He cannot write his own name. He does not know the day of the week, and whether it is summer or winter. His attention is difficult to hold. The defect has existed from an early age and is so pronounced that he is incapable of managing himself or his affairs or of being taught to do so. He requires constant care and supervision.

- III. Feeble-Minded:** Children in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility yet so pronounced that they require care, supervision and control for their own protection and the protection of others, and are incapable of receiving benefit from instruction in an ordinary school.

Facts observed at the time of examination:

Hilda James although of the age of 8 years cannot count *backwards* from 10 to 1, and does not know the correct date of the month or the year, and cannot pick out coins of the realm correctly. She is restless, and emotional, and her attention while easy to attract is with difficulty held for more than a minute or two. Her general intelligence is that of a child of 4 or 5

years. The defect has existed from an early age and needs care and supervision for her own protection and the protection of others.

This class of child can be educated in "Special Schools". It should be noted that a "BACKWARD" CHILD is merely a "dunce" and must not be classed with the "FEEBLE-MINDED.

There must be a difference of at least 3 or 4 years in the School Standard of learning before a child can be legally classed as "FEEBLE-MINDED."

NORMAL PRACTICAL CLASSIFICATION.

The Milestones of Mental Development.

Birth.—able to suck.

Three months.—holds up the head, recognises Mother. Follows objects with *head and eyes*.

Six to seven months.—sits up without being propped up. Picks things up, and holds them in the hand and carries them to his mouth.

Eight to nine months.—trying to stand.

Ten months.—standing well.

One year.—beginning to walk, says a few simple words.

Eighteen months.—walking well.

Two years.—Can say short sentences. Habits almost clear.

Three years.—The child is capable of announcing the following:

1. "Show me your eyes"!
"Show me your nose"!
"Show me your mouth"!
2. What is your name? (Christian name & surname).
3. Say after me "3.7". Again "6.4". Again "1.5".
4. Say after me "The Pussy cat likes good milk".
5. Enumeration of simple objects in a picture, such as a cat, dog, boy, house, etc.

Five years: The child can answer and do the following:

- I. "Are you a little boy, or a little girl"?
- II. Correct repetition of 3 or 4 numbers together.
- III. Counting in order correctly 5 or 6 coins in a row.

IV. Memorizing sentences of ten syllables.

Repeat "I love my daddy, he is so kind to me".

V. Copying on paper with a pencil a simple object like a square or a cross.

Seven years: The child can do these:

I. "Show me your right foot?"

"Show me your left ear?" etc.

II. Counts correctly 12 to 15 coins placed flat on the table but not in a line.

III. "What is a fork?"

"What is a table?"

"What is a horse?"

The child must be able to give some definition of the "use" type, e.g. "A fork is for eating with".

IV. Picks out correctly different colours (unless colour blind).

V. Performs a simple series of commands:

For example "(1) Take this key, (2) place it on the chair near the door, (3) then shut the door, (4) and bring the key (5) back to me".

The command must be repeated clearly *twice*.

TESTS FOR FEEBLE-MINDEDNESS.

Child aged 10 years: NORMAL.

I. Correct enumeration of the months of the year in order.

II. Giving correct change.

III. Picking out objects (similar in appearance) in order of heaviness.

IV. Making up a simple sentence containing three words given by the examiner.

V. Indicating the foolish and absurd points in a few sentences given:

Thus (1) I have *three* sisters Gladys, Mary and myself.

(2) An unfortunate man fell off his bicycle and *was killed* instantly. He was taken to a hospital and they *fear he will not recover*.

- (3) There was a railway accident yesterday but it was *not a bad one*. Only 48 people were *killed*.

The child at school: normal standards for normal children in Great Britain.

Standard	I	7 — 8	years.
"	II	8 — 9	"
"	III	9 — 10	"
"	IV	10 — 11	"
"	V	11 — 12	"
"	VI	12 — 13	"
"	VII	13 — 14	"

If a child has been in good health and has attended school regularly is not able to pass Standard IV at 14 years, he may in most cases be classified as mentally defective.

(I am indebted to Prof. C. W. Vining M.D., F.R.C.P., of the General Infirmary at Leeds for the use of his cases.)



Clinical Atlas.

Sir Berkeley Moynihan's Classification of ABDOMINAL HERNIAE.

A Hernia is the protrusion of a viscus from its normal situation through an abnormal opening in the walls of the cavity in which it is contained. (Sir Berkeley Moynihan, Bt.)

CONDITION OF A HERNIA. (Definitions as given by Sir Frederick Treves, Bt.)

1. **REDUCIBLE.** One in which there is **no** impediment to the return of the contents of the sac into the abdomen.
2. **IRRIDUCIBLE.** One in which there is **an** impediment to the return of the contents of the sac into the abdomen.

Causes of Irriducibility.

1. Adhesions (a) 'between' sac and omentum.
(b) between sac and gut.
(c) between gut and omentum.
2. Increase in size of contents.
(a) deposit of fat in omentum or mesentery or both.
(b) growths in mesentery, gut or omentum.
(c) cysts in mesentery or omentum.
3. 'Pert de droit de domicile' when there is lack of room in the abdomen for originally contained contents now in sac.
4. Hernia of certain viscera.
(a) **BLADDER** (1) Paraperitoneal
(2) Extraperitoneal

Varieties.

- (b) **CAECUM and SIGMOID** Landslip Hernia.
3. **OBSTRUCTED OR INCARCERATED.** One in which there is an impediment to the return of the contents of the sac into the abdomen **PLUS** an impediment to the onward passage of the contents of the gut in the sac.

Causes of Obstruction.

1. Presence of solid matter in the gut, especially liable to occur in Umbilical herniae which often contains the transverse colon. Complicated matting of the gut interferes with its peristaltic action.
4. STRANGULATED. One in which there is an impediment to the return of the contents of the sac into the abdomen, PLUS an impediment to the onward passage of the contents of the gut in the sac, PLUS an impediment to the vascular flow in the hernial contents, (i.e. obstructed plus a vascular defect).

Causes of Strangulation.

1. Existence of a tight strangulating band or constriction at the External abdomen ring in Inguinal Herniae—and in cases a the Internal Ring. (by Gimbernats Ligament in Femoral Herniae).
2. Bands of adhesions inside the sac as result of Inflammation.
3. Forcing down suddenly of extra viscera into the sac.
4. Volvulus of the Hernia.
5. INFLAMED. A hernia of the omentum only can therefore never be a strangulated hernia. The conditions which produce a strangulated hernia cause an omental hernia to be inflamed.

INGUINAL HERNIA.**ANATOMY of the INGUINAL VALVE.**

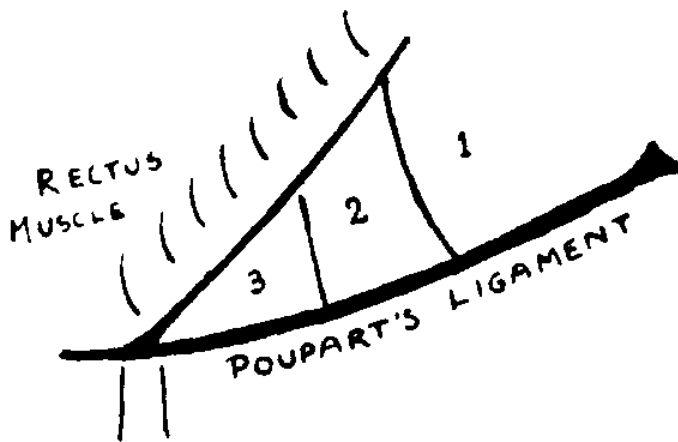
The inguinal valve is a potential canal, situated immediately above the inner half of Poupart's ligament—and extending from the Int. Abd. Ring to the Ext. Abd. Ring. Runs downwards and forwards and internally (D.F.&I.) 1½" long. On section it is triangular, having a floor, anterior and posterior walls, the roof being formed by the junction of the anterior and posterior walls.

- (a) FLOOR formed by
- (1) Abdominal grooved surface of Poupart's Ligament.
 - (2) Gimbernats Ligament in INNER part.
- (b) ANTERIOR WALL
- (1) Aponeurosis of Ext. oblique in *whole length*.
 - (2) Internal oblique in OUTER 1/3 (one third.)

- (c) POSTERIOR WALL (1) Transversalis fascia in *whole length*.
 (2) Conjoined Tendon, in *inner part*.
 (3) Triangular Fascia.

IMPORTANT POINTS concerning Herniae.

HESELBACH'S TRIANGLE



Anterior Superior Iliac Spine

- 1.—Internal Abdominal Ring.
- 2.—Obliterated Hypogastric Artery.
- 3.—Deep Epigastric Vessels.

- 1. Entrance of oblique or indirect inguinal hernia.
- 2. Entrance of Superior or external direct inguinal hernia.
- 3. Entrance of Inferior or internal direct inguinal hernia.

Coverings which are:

I. OBLIQUE OR INDIRECT.	2. EXTERNAL OR SUPERIOR DIRECT.	3. INTERNAL OR INFERIOR DIRECT.
1. Skin	do.	do.
2. Superficial fascia	do.	do.
3. Intercolumnar fascia	do.	do.
4. Cremasteric Muscle & fascia	do.	Conjoined tendon.
5. Infundibuliform fascia	Transversalis fascia.	Transversalis Fascia.
6. Subperitoneal Fatty Tissue	do.	do.
7. Peritoneum	do.	do.

FEMORAL HERNIAE Coverings:

- 1. Skin.
- 2. Superficial fascia.
- 3. Cribriform fascia. (Intercolumnar fascia in Inguinal herniae).
- 4. Femoral sheath. (ant. wall).

5. Septum crurali.
6. Subperitoneal fatty tissue.
7. Peritoneum.

The Classification of Inguinal herniae may be as follows:

- (A) Anatomical.
- (B) According to degree.
- (C) According to the type of sac.

ANATOMICAL.

1. Oblique or indirect inguinal.
2. External or superior direct.
3. Internal or inferior direct.

vide drawing of
Heselbach's triangle.

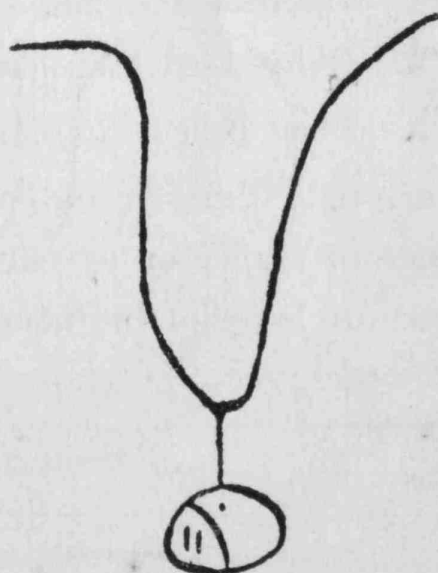
DEGREE.

1. Complete....into scrotum or Labium Major (female).
2. Incomplete....into inguinal canal only....bubonocele.

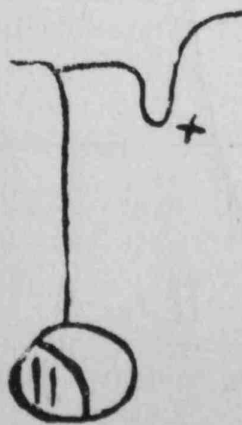
ACCORDING TO TYPE OF SAC.



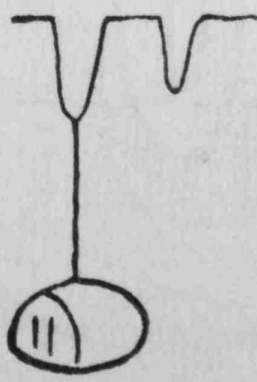
(a)—Congenital



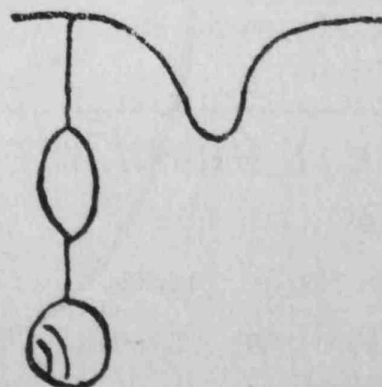
(b)—Funicular.



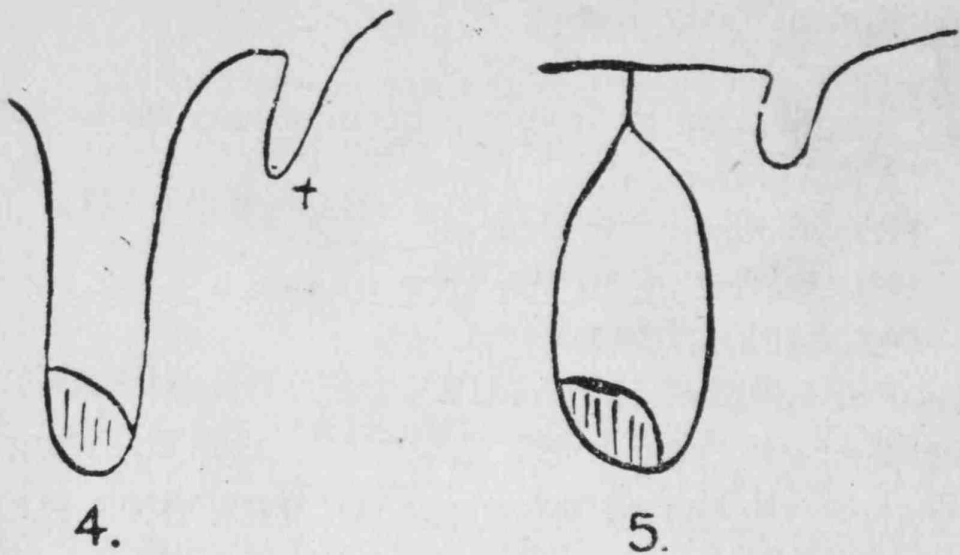
1.



2.

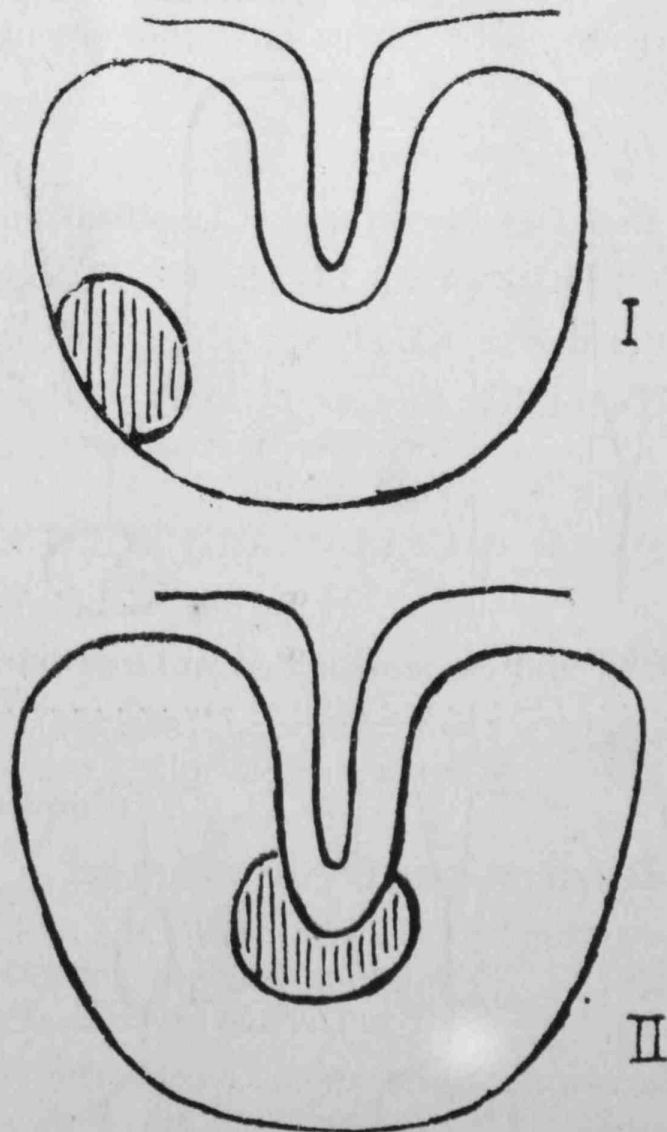


3.



(c)—Infantile. (Five varieties.)

Sac always comes down behind cord and testis. But the condition of the funicular process may vary.



4.—Encysted (Lockwood)
(Synonymous with Hey's Infantile Hernia)

TREATMENT.

1. Palliative.....Truss.
2. Operative.....Radical Cure....by:
 - (a) Bassini's Operation (Bassini No. 1).
 - (b) Ferguson's Operation (Bassini No. 11).
 - (c) Halstead's Operation.
 - (d) Banks' Operation.

THE ESSENTIAL FEATURE OF THE OPERATION IS THE REMOVAL OF THE HERNIAL SAC, PLUS THE BRINGING TOGETHER OF THE INTERNAL OBLIQUE AND TRANSVERSALIS MUSCLE ON THE ONE HAND TO THE DEEP ASPECT OF POUPART'S LIGAMENT ON THE OTHER. In Bassini's operation this is done *posterior* to the cord, whereas in Ferguson's operation it is done *anterior* to the cord.

As an additional barrier 'Imbrication of the External oblique' was introduced by Lucas championère of Paris.

A.C.

**Sir Berkeley Moynihan's Classification of
NON-MALIGNANT THYROID TUMOURS.**

- I. Enlargements due to RETENTION of SECRETION.
COLLOID GOITRE: the acini are enlarged; there is no increase in cellular activity. Metabolic rate normal.
- II. Enlargements due to CELLULAR PROLIFERATION
(hyperplasia)
 - (A) Localized and circumscribed enlargements:

ADENOMA: Non-toxic: Metabolic rate NORMAL
Toxic: metabolic rate INCREASED
("Plummer's Disease").

Adenoma shows two types of change.

 - (1) Degeneration: CYST-ADENOMA: cyst is due to haemorrhage or retention of secretion, or both: CALCIFIED ADENOMA.
 - (2) Proliferation: The cells burst the capsule of the tumour.

PROLIFERATING ADENOMA.
This is closely allied to carcinoma.

(B) Diffuse enlargements.

(1) WITH hypersecretion: "GRAVE'S DISEASE".

(2) WITHOUT hypersecretion: PARENCHYMATOUS
GOITRE.

(3) with degeneration and fibrosis:

FIBROS GOITRE.

A.C.



Correspondence.

To

The Editor.

The Caduceus.

Sir,

As a constant reader of the Caduceus, I have noticed how vigorously the Journal has grown in these two years under your able lead as its Chairman and Editor. I congratulate you on this excellent piece of work, for by it the Journal has been raised to the position of a serious rival to many older publications in your part of the world.

But the issue for March 1927 abounds with mistakes and the most culpable is your Editorial. Words are carelessly omitted or wrongly inserted: capital letters are flung about with a generosity that would have filled many school-masters with horror: and punctuation marks are allowed to fall where they will.

I do not believe these are mistakes of ignorance: for if I may be permitted to be frank without offence you have an unusually fine grasp of the English language and literature. One can only account for them by the assumption that you are so far satisfied with your work that you are resting on your oars, so to speak. But it would be a grave mistake to do so. Only by "unceasing diligence that your end you will gain."

It was a happy choice on your part to pick as the title to your editorial the Latin words *Respice*, *Aspice*, and *Prospice*; and in the main I agree with the substance of your leader; but I beg to differ on the following points.

You have but hinted timidly that lectures should take second place to practical work; but I would emphatically say that lectures should be abolished and relegated to the limbo of forgotten things or only to be reserved as a refined form of academic torture for special occasions.

I well remember in the early days of my youth a certain lecturer who seemed to feel offended if you did not attend his classes and he would mark you spitefully as a lamb for slaughter at the next examination. The result was he had crowded classes but I doubt if any one benefitted by them although we were all grateful for the practical work he taught us. The lectures took the form of a dictation exercise and whether by design or by accident—(that I wot not)—they were invariably given in the hot afternoons.

Looking at some of my old note-books now, I am much amused to see weird things written in them—the result of my semi-somnolent state, and I also notice queer lines which were

not unlike sphygmographic tracings. These apparently represented the moment when I must have actually dozed off during the dictation exercise. You must admit, Sir, that lectures as thus given are a waste of time to the lecturer and a cruel torture to the students who must perforce suffer this penance and for a few hours each day listen to all types of lecturers—good, bad and indifferent.

As you frequently ask for suggestions and criticisms, I may also may add that the articles in the Journal might be more technical and less general. If we mean this to be a technical journal, let us make it technical: on the other hand, if it is to be a students' journal let us throw off this mask of dignified solemnity and hoary wisdom which is so foreign to our spirit and unseemingly in our years. I cannot recall ever having seen a journal that is so akin to ours. Frankly, let us either be a scientific journal or let us be a students' rag magazine. To attempt to stifle the youthful spirit of fun and folly beneath a heavy mantle of scientific subjects and discussions is to kill the one and hamper the other.

In the latter part of your leader, you seemed to be optimistic about the future of the University. Much as I desire to share your optimism, I cannot help feeling that your views are more rosy than real. If the University wish for support from her graduates and friends she should find the ways and means of keeping in touch with them and not to call on them only when help is needed.

"No representation no taxation" was the cry that preceded the loss of a large empire, and the 'varsity authorities would err in the same way, if they remain deaf to the cry of "no recognition, no support." In universities elsewhere, the graduates have an opportunity of getting on to the full staff, and thereby have a hand in shaping the destiny of their own institution and protecting the interest of students and others, remembering that they were once students there. As it is, where the interest of the latter clash with the whims of the powers that be, there is no effective check on their autocratic power. As an example, I may quote the recent controversy on the new diploma. And you ask us to be loyal and generous in our support——support of what?——of autocracy? We will not bow down and worship Baal!

No Sir, where there is no link between students and staff, there can be no deep understanding and sympathy; where there is no sympathy, there can be no love. Without love and sentiment, no institution can ever hope to keep alive the interest, loyalty and support of its own people and friends. To demand recognition and representation is no Bolshevism (although Heaven knows what the poor Bolshevik has not been blamed for).

In conclusion, I thank you for publishing this rather lengthy letter. You have often asked for suggestions and criticism, and now perhaps you have got more than you bargain for. I may be wrong in my views, but at least I am entitled to the honest expression of an opinion. You have my best wishes for your noble work, but it seems to me you have tackled the wrong end of the problem. Don't preach to us for we fully appreciate and sympathise with your projects, but preach to the Philistines—the autocratic powers that be. They badly need a sermon and a plain talk will do them good. However, although we may not see eye to eye in many things, yet many like myself recognise the altruistic and valuable work you are doing, and I wish to add in all sincerity, that the Medical Society owes much to your organising ability, to your zeal and gifted pen. As an Editor and Chairman you have a right to speak frankly on the many things that need reform, and I hope you will take this opportunity to do so and earn the gratitude of many.

Yours sincerely,

“OLD HORN.”

REPLY.

We are grateful to our correspondent, not so much for the views he expresses, as for the chance it offers us of making an explanation.

When the last issue was going through the press, we were unavoidably absent from the colony, and the work of proof-reading, and correction, etc., was left in the hands of some one in the Editorial office. Our surprise was great, when we saw the Journal just prior to its distribution. Words were put in which were not our own or left out altogether with equal impartiality. On enquiry, we found that some one at the Editorial office had conceived the brilliant idea that by sprinkling mistakes all over the Journal, but more especially in our Editorial, a keener interest might be stimulated in our readers—an interest not unlike that evinced by some people when they see a page of cross-word puzzles. That this ruse, machiavellian though it seems, has not altogether been unsuccessful, is evidenced by the spirited letter it has drawn from our correspondent. In so far, therefore, as it seems to have served the purpose of rousing greater interest in our readers, we are glad, but we do not quite relish the idea of having been made to appear as the author of such faulty English.

We can assure our correspondent that of the magnanimity of our task, we are fully conscious, and because it has increasingly taken up so much of our time, we feel we shall be compelled to relinquish our post towards the end of this year. It has been a source of pride to us to have been instrumental in re-organising this Journal, and the success that has attended our efforts these two years has been very encouraging indeed. The policy of

working for a closer union and better understanding between our supporters and this institution is, we confess, entirely our own, but we are convinced much good will result from it, and we hope our successors will consistently carry it out. Far from taking things easy, as our correspondent seems to hint so tactfully, we are feeling we cannot give to the work the time and the attention it needs, and for that reason, we are urging that others should come forward and relieve us of this responsibility.

With regard to our correspondent's first criticism anent lectures,—the reason why we have not been as sweeping in our statements as he has been, is, because we are not convinced that lectures are altogether as worthless as he makes out. He may be one of those happy individuals who can study without a teacher, but for the majority, lectures are a help. It is one function of a good teacher to be able to present the same subject in a variety of ways and from a variety of angles, in the hope that one or the other form of presentation may strike some student or other. One may therefore pardonably be redundant in a class, but this is manifestly impossible in text books. Again, in a class, the students' senses of sight and hearing are stimulated at the same time, and this certainly aids the memory. In our opinion, then, lectures do have a place, even though it is only a second place in the students' training.

To his remark that he cannot recall ever having seen a journal that "is so akin to ours"—we would assure him that that is exactly the reason why we have it. To imitate others, however successfully is still but an imitation—and there is glory in originality. Besides our problems are peculiarly our own, and the Journal was created primarily to answer our own needs, and not merely to serve as an imitation of others however successfully. It is a distinction to be unique. In the last paragraph, our correspondent says he does not share our optimism. Possibly not, but there again, unlike his, our optimism does not consist in the successful imitation of the aims and objects of other universities. So long as this Journal answers our needs it justifies our optimism. Like a great many worthy individuals, our correspondent lacks the elasticity of mind, the well-developed biological characteristic of living things to respond and readily adjust themselves to their environments. Such people grate on one's nerves by eternally harping that "at Home we do this, or that"—. They forget that what they do "at Home" is no argument that it must be right or that it will be suitable here.

The points he complains of are deepseated and fundamental. It was Kipling who once said "Oh, East is East, and West is West, and never the twain shall meet"—but on the common ground of science, rising above vulgar prejudice and crass ignorance, there is that common interest and common goal that may

yet prove the fallacy of Kipling's words. But Rome was not built in a day, and will never be built by people who, (figuratively speaking), would go off on strike periodically. Our correspondent should have a constructive outlook, and not to cry "Hands off" because he cannot get all he wants at once.

We thank him for the nice things he said about us:—it is refreshing to know that one's little efforts are not unappreciated. But however much he may like us to we can never be as reckless and irresponsible in our opinion as he has been. To his concluding remarks, we would only say, "*Omnia mihi licent, sed non omnia expediunt.*"

S. W. P.
(Editor.)



Review of Books

Practical Tropical Sanitation: by E. P. Minett, A. G. M. Severn, and Mrs. Minett. Second Edition Pp. x — 180 with numerous figures. 5/- net. Bailliere, Tindall, and Cox, London, 1927.

The first edition of this popular handbook by Dr. E. P. Minett appeared in 1920 and rapidly became established as a standard work of reference for Sanitary Inspectors engaged in tropical countries. In the second edition, now issued, the senior author has invited Dr. A. G. M. Severn and Dr. E. M. Minett to contribute sections on House Disinfection and School Hygiene respectively and the text-book is thereby considerably enlarged and strengthened. Dr. Minett is modest enough to explain in his preface that the manual is intended only for Sanitary Inspectors, but the present edition will be welcomed by a much wider circle of readers and should occupy a prominent place on the book-shelf of every man who finds himself saddled with domestic responsibilities in the tropics.

The book is essentially practical and is not overburdened with technical descriptions and formulae which would appeal only to the professional mind. The problems of Water Supplies, Sewage and Refuse Disposal, Food, Building Construction, Disinfectants, and the Health of School-children are treated on sound common-sense lines, orthodox to a degree, but supported by the most modern scientific experience.

The manual is written in a style which is conversational rather than conventional and this feature adds to its directness, clarity and force, but there is just a danger that brevity is sometimes attained at the expense of accuracy. For example, in discussing the purification of water by chlorination, the author states that "in practice it is usually effected by using Chloride of Lime (bleaching powder)." The use of the trade name here might be justified on the score of convenience but it is apt to lead to confusion. To be strictly accurate, bleaching powder is not chloride of lime; it is really an unstable compound which, when dissolved in water, yields calcium hypochlorite. Chloride of lime in water is practically inert; hypochlorite of lime is the effective agent in the process of chlorination.

Throughout the text, the senior author has drawn largely from his own experience which has been literally world-wide and unusually varied. The illustrations represent his personal observations in South China, Palestine, Egypt, Europe, and the West Indies, and he has raided with advantage such cosmopolitan publications as the *Journal of the Royal Army Medical Corps* and the *Transactions of the Royal Society of Tropical Medicine and Hygiene*.

Amongst the new features of the second edition, special importance attaches to the chapter on Schools. Mrs. Minett is the Medical Officer for Schools under the Government of Hong Kong and she brings to the work an extensive experience in similar posts in England and in British Guiana. Her contribution therefore is authoritative.

We congratulate Dr. Minett and his collaborators on producing a very readable, very handy and thoroughly reliable manual. For ready reference the professional man will find in it a *multum in parvo*; for examination purposes and for help in everyday problems, the Sanitary Inspector will find in it an indispensable guide; and for sound advice on all questions of health in a foreign land, the layman will find in it a clear statement of his duty towards himself and his neighbours.

J. A.

A Handbook of Renal Surgery: by F. McG. Loughhane, F.R.C.S. With Illustrations. 8vo. Price 10/6. Published by Longmans, Green Ltd., and Co., London, E.C.4, 1926.

We always welcome small readable handbooks on special subjects in Surgery, such as the one under review. Such books are nearly always more up-to-date than the corresponding sections in the larger text books and systems.

The illustrations and printing are excellent. The account of the estimation of renal function is clear and practical as indeed are most parts of the books. We regret however the absence of an index.

K. H. D.

Bailliere's Synthetic Anatomy: by J. E. Cheesman, Deputy Medical Officer of Health for Leyton, London. Parts I, II, III, (Arm and Shoulder, Forearm, and Hand). Price for each part with index 2/6. Published by Bailliere, Tindall and Cox, London, 1926.

This book is an ingenious presentation of superposable transparent diagrams of the part which enable the student to work forwards or backwards, superficially or deeply through the part. There is no claim that these diagrams are any substitute for dissection, nor could they ever be. But students revising their regional anatomy will find them helpful. An ideal diagram should be very simple, all but the essential features being omitted and attention concentrated on a few points only. The diagrams in this work are more like maps than diagrams.

K. H. D.

Aids to Case-Taking: by H. L. McKisack, M.D., F.R.C.P., Lond. 8vo. pp. vii, 168. Price 4/6. Bailliere, Tindall and Cox, London.

As the author states, the object of this book is to assist practitioners and students to examine their cases methodically.

The book is written more from the outlook of a Physician than a Surgeon, and as such it should prove a very useful guide to the student in his final year.

The importance of taking a good history of a case cannot be too strongly emphasised, particularly for the junior practitioner, for it is only with experience gained in so doing that he will leave the points that are relevant and those that are not.

The little book is written clearly and concisely and contains much information which the student would do well to acquire before presenting himself for his final examinations.

R. E. T.

Aids to Pathology: by Harry Campbell, M.D., B.S., F.R.C.P., 8vo. pp. viii, 250, Price 4/6. Bailliere, Tindall and Cox, London.

A book that has already gone through four editions needs little recommendation. The author has added much new material particularly in the chapter dealing with the Blood, Immunity, Tumours, Vitamines, Endocrines, Spleen, Lymph Glands and Diabetes.

Throughout the book, one is impressed by the clinical outlook of the author; there is not that tendency to put pathology in a watertight compartment of its own, that one sometimes finds.

The latest theories on malignant disease are given, and also the subject of wound shock and collapse are dealt with.

The book contains a vast account of information in a limited space. And for the purpose it is intended we have no hesitation in recommending it to the student, or busy practitioner who wishes to 'rub up' his knowledge of the subject.

R. E. T.

Pharmaceutical Notes

Merck's 'Helminal'.

The frequent occurrence of ascarides infection and great shortage of santonin now existing for some time have called for another reliable anthelmintic. A drug to be suitable as such should act more strongly on the parasite than on the host, all the more since in a large percentage of cases the patient is an infant. Therefore, next to a reliable action of the preparation which is to be chosen as a substitute for santonin, its innocuousness should be the most important point for consideration.

HELMINAL which is prepared from a species of digenea (*Rhodomelaceae*) possesses the properties of an ideal anthelmintic in these respects. Whether it acts as a vermicide or as a vermifuge is not certain; it probably fulfils the functions of both. Whatever its mode of action it frees the patient from his worms without being accompanied by unpleasant by-effects. Even small children may take it with impunity. Messrs. E. Merck have put on sale tablets in bottles of 20 and 50, and granules in bottles sufficient for a course of treatment. The local agents are Messrs. Bornemann and Co., Asiatic Building.

Beiersdorf 'Aolan'.

Owing to its complete freedom from harmful by-effects, Aolan is indicated as a tentative measure in all local and general infective conditions. In the majority of cases a favourable influence upon the course of the disease is observed after the first injection. Thus, the pain which accompanies inflammatory conditions is almost immediately relieved.

The manufacturers claim that Aolan differs from all other albumen preparations, and it affords a method which is markedly superior to treatment by injections of boiled milk. Messrs. P. Beiersdorf and Co., A-G., Hamburg, are the makers and their Agents in Hong Kong are The China Export-Import and Bank Co., Asiatic Building.

Bayer 'Compral'.

Compral is a simple chemical compound of 'Voluntal' (*urethane of trichlorethyl-alcohol*) and 'Pyramidon' (*dimethylaminophenyl dimethylpyrazolon*). It is claimed to be a highly effective analgesic and anodyne, and is remarkably rapid in action and exceptionally free from injurious effects. Agents in Hong Kong:—The China Export-Import and Bank Co., Asiatic Building.

Wellcome 'Insulin'.

With the approval of the Medical Research Council Messrs. Burroughs Wellcome and Co., are now prepared to supply

'Wellcome' Brand Insulin, 200 units in 5 c.c. in addition to the regular strength of 100 units in 5 c.c.

The increased concentration now available will no doubt be greatly appreciated by medical men who have patients requiring a high unit dosage.

To avoid the possible risk of overdosage, the 40 units per c.c. strength is issued with a label and in a carton of a distinctive colour entirely different from the colour of the label and carton used for the 20 units per c.c. strength.

The prices are.—

100 units in 5 c.c. \$21.60 per dozen.

200 units in 5 c.c. 33.40 per dozen.

(Messrs. Burroughs Wellcome and Co., 5, Hong Kong Road, Shanghai).



Acknowledgments

We have much pleasure in acknowledging the receipt with thanks of the following contemporaries.—

St. Mary's Hospital Gazette, London.

St. George's Hospital Gazette, London.

The Medical Times, London.

The Australian Journal of Experimental Biology and
Medical Science University of Adelaide.

Chinesische Zeitschrift für Die Gesamte Medizin, Moukden.

Okayama Igakkai Zasshi, Die Universität, Okayama, Japan.

The Journal of the Ceylon Branch of the British Medical
Association, Colombo.

The Malayan Medical Journal, Singapore.

Mededeelingen Van Den Dienst Der Volksgezondheid in
Nederlandsch-Indie.

The University of Toronto Medical Journal.

Cornell University Medical Bulletin, New York City.

The Jefferson Medical College Bulletin, Philadelphia.

Index Universalis, Moukden.

The Taiwan Igakkai Zasshi, Formosa.

Bulletin de la Société des Sciences Médicales, Montpellier.

Prace Zakładów Anatomji Patologicznej Uniwersytetów
Polskich.

University College Hospital Magazine, London.

"Gann", The Japanese Journal of Cancer Research, Tokyo.

The Prescriber, Edinburgh.

The Birmingham Medical Review, Birmingham.

The Hospital Gazette, London.

The Post-Graduate Medical Journal, London.

Contributions from the Peking Union Medical College,
Vol. 1. Peking.

Reprints.—

"Otitic Meningitis", by Wells P. Eagleton, M.D.,
Reprinted from the Journal of the American
Medical Association, Nov. 6, 1926, Vol. 87, p.p.
1544-1548.

Notes And Comments

Post Graduate Course in Obstetrics and Gynaecology.

We understand that Professor Tottenham of the Department of Obstetrics and Gynaecology of the Hong Kong University is proposing to have a post-graduate course in obstetrics and gynaecology, during the Christmas Vacation. The course consists of twelve classes including demonstrations.

Now that a course in obstetrics and gynaecology will be given, it is hoped that support from the general practitioners will be forthcoming. We feel that this course has filled a gap of longfelt want, and should the proposition be successful, we believe that other departments of the Hong Kong University Medical School will make arrangements for further post-graduate studies in their respective subjects.

Further particulars can be obtained from Professor Tottenham.

Activities of the Society.

It has been proposed to hold the Annual Dinner of the Hong Kong University Medical Society about the end of September. A Dinner Dance has been suggested and it is hoped that the meeting will be successful. A circular will be issued sometime next month with full details.

A series of lectures has been arranged for the autumn session, and for the benefit of members, it has been decided to hold these meetings at 6.15 p.m.

September, 21st.

Dr. M. O. Pfister.

October, 5th.

Dr. Alexander Cannon.

October, 19th.

Dr. S. F. Li.

November, 2nd.

Dr. E. W. Kirk.

November, 16th.

M.B., B.S. Examinations.

The results of the first, second and third medical examinations held in May 1927 are published below. It is interesting to note that in the final examination only 40% of the total number of candidates passed in Part One (Surgery and Obstetrics & Gynaecology) and 41.2% passed in Part Two, (Medicine and Pathology).

1st M.B., Part 1, (Old Regulations) (Physics and Inorganic Chemistry).

Ho Shai Cheong.

1st M.B., Part 1, (New Regulations) (Physics, Inorganic and Organic Chemistry).

The Tokoku Journal of Experimental Medicine, Tokoku Imperial University, Sendai, Japan.

Acta Obstetrica et Gynecologica Scandinavica, (University, Lund, Sweden).

Kohlengrubenarbeit und Tuberculose in Schweden, von Gustaf Alling, (University, Lund, Sweden).

Acta Pathologica et Microbiologica Scandinavica, (University, Lund, Sweden).

Boletin de la Universidad Nacional de la Plata, Argentina, S.A.

Health, Shanghai.

Arquivos de Clinica Medica, Faculdade de Medicina de Porto, Portugal.

Annual Report of the Health Organization for 1926, League of Nations, Geneva.

Stanford University Publications, Medical Sciences. Vol. II, No. 1.

“The Status of Hygiene Programs in Institutions of Higher Education in the United States”, by Thomas A. Storey, M.D., Ph.D.

Reprints from the Nutrition Laboratory, Carnegie Institution of Washington, Boston.

“The Metabolic Effect of Enemata of Alcohol, Dextrose and Levulose, in Humans”, by Thorne M.-Carpenter.

“Insensible Perspiration; Its Relation to Human Physiology and Pathology” by Francis G. Benedict, Ph.D., and Howard F. Root, M.D.

“A Gas Analysis Apparatus Modified for the Determination of Methane in Metabolism Apparatus”, by Thorne M. Carpenter and Edward L. Fox.

“Annual Report of the Director of the Nutrition Laboratory”.

“The Fasting of Large Ruminants. The Basal Metabolism of Steers. The Metabolic Stimulus of Food in the Case of Steers”, by F. G. Benedict and E. G. Ritzman”.

- "Surgical Aspects of *Ascaris Lumbricoides*", by A. I. Ludlow, M.D., F.A.C.S., Research Department, Severance Union Medical College, Seoul, Chosen. Reprinted from the *China Medical Journal*, February, 1927.
- "A Mycotic Disease of Batrachians", by H. Harold Scott, M.D., F.R.C.P., D.T.M.H., F.R.S.E., from the *Proceedings of the Zoological Society of London*, 1926, 15th. September, 1926.
- "Public Health Problems in Korea, as shown by a Study of Child Mortality", by J. D. Van Buskirk, M.D., Research Department, Severance Union Medical College Seoul, Chosen. Reprinted from the *China Medical Journal*, March, 1927.
- Acta Pathologica Microbiologia Scandinavica*, Copenhagen, Denmark.
- Bulletin of the Medical Department of the University of Georgia*, Augusta, G.A.
- University of Cincinnati Record*, Cincinnati.
- The Japan Medical World*, Tokio, Japan.
- Acta Psychiatrica et Neurologica*. (Karolinska Institutets Bibliotek, Stockholm).
- The Canadian Journal of Medical and Surgery*, Toronto.
- The Moukden Medical College Journal*.
- The Medical Journal of Australia*, Sydney.
- Health and Empire*, London.
- Seventeenth Annual Statement, Report for 1926*, The Moukden Medical College.
- La Revue Medicale & Scientifique*, Beirut, Syria.
- Bulletin of the School of Medicine, University of Maryland*, Baltimore, MD.
- Mitteilungen Über Allgemeine Pathologie und Pathologische Anatomy*, Die Tohoko Kaiserliche Universitat zu Sendai, Japan.
- Bulletins from the Institute for Medical Research*, Kuala Lumpur, F.M.S.
- "The Bacteriophage in the Treatment of Bacillary Dysentery of the Flexner Type", by Wm. Fletcher and K. Kanagarayer.
- "Notes on Diphtheria in the Federated Malay States" by William Fletcher, M.D., M.R.C.P.

Chan Iu Fong.
Law Nai Koey.
Li Ching Wa.

Oon Goan Ek.
Poon Kei Yeung.
Tan Liang Hoat.

1st M.B., Part 2, (Biology).

Ho Suk Yee.
Lam Kow Cheong.
Lau Yong Boon.

Lim Peng Chin.
Tan Boon Teng.
Tan Liang Hoat.

1st M.B., Part 3, (Old Regulations) (Organic Chemistry).

Lim Nget Siew.

Tsan Wei Chean.

2nd M.B., Part 1, (Anatomy and Physiology).

Chan Ping In.
Cheung Shiu Fan.
Guterres, A. P.
Jap Boon Koey.
Miss Leung Chum Ha.
Li Sau Cho.

Loh Seng Poh.
Miss Pau Choi Chue.
Pau Peter.
Miss P. Ruttonjee.
Miss Tong Lai Yee.
Tsan Tze Ming.

2nd M.B., Part 2, (General Pathology and Pharmacology).

Cheah Cheng Poh.
Cheah Khay Chuan.
Cheung Shiu Fan.
de Souza, G. F.
Gourdin, A.
Karanja, N. P.
Kwan Pah Chien.

Shi Man Wai.
Teh Yok Chin.
Wu Ta Piao.
Yang Lin.
Yang Pao Chang.
Yu Chiu Kwong.

3rd M.B., Part 1, (Surgery and Obstetrics & Gynæcology).

Da Roza, C. F. X.
Laing, D.
Li Kuang Yu.

Ma Wai Man.
Shem Albert.
Tu Teng Pang.

3rd M.M., Part 2, (Medicine and Pathology).

Chan Joo Cheng.
Chow Tin Cham.
Kao Ching Hsun.
Tang Yee Yuen.

Tu Teng Pang.
Wong Yan Kwong.
Yip Keung Ki.

The following candidates are recommended for the M.B., B.S. degrees.

Li Kuang Yu.
Ma Wai Man.
Tang Yee Yuen.
Tu Teng Pang.

Appointments

Government Civil Hospital.

The following have been appointed.—

House Obstetrician	Dr. T. Z. Bau.
House Physician	Dr. J. S. Guzdar.
House Surgeon	Dr. C. H. Yeoh.
Clinical Assistant to the Obstetrical and Gynaecological Department	Dr. S. K. Lam.
Clinical Assistant to the Medical Department	Dr. K. Y. Li.
Clinical Assistant to the Surgical Department	Dr. T. P. Tu.

Kwong Wah Hospital.

Resident Medical Officers	Dr. W. M. Ma.
	Dr. Y. Y. Tang.

Chinese Public Dispensary (Central District).

Medical Officer in charge	Dr. F. C. Tsang.
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